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School Matriculation as an Indicator of Success in an Accounting Programme at Technikon Natal

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Degree of
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ABSTRACT

The high failure rate of students at Technikons is of great concern to all who are involved in tertiary education. If the current entrance requirements, which are predominately based on matriculation results, are failing to select successful students, these entrance requirements need to be investigated to determine if they are accurate predictors of success. The research reviews the current entrance requirements to Accounting programmes offered at Technikon Natal, and tests the reliability of these requirements, namely matriculation results, as predictors of success in the programmes. Predictor variables such as overall matriculation results, individual subjects or combinations of subjects are considered.

The research used students registered for an Accounting diploma at Technikon Natal from 1996 to 1998. The progress of these students was monitored over the period of three years required to complete the Accounting programmes. Overall matriculation results, measured by Swedish points, and subjects studied for matriculation were used to determine if a correlation exists between these results and the number of subjects passed in each year of study.

The overall conclusion is that students who have 26 Swedish points and above and/or Accounting matriculation results of a HG-D or SG-C pass more subjects in each year of the three-year Accounting programme than those students who have not achieved these results. The concurrent study of Accounting, Mathematics and Economics was significant for the second and third year of study. A degree of caution is necessary here as students with lower results were also successful in the completion of the Accounting programmes within three years.

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LIST OF DEFINITION AND ABBREVIATIONS

DEFINITIONS

National Diploma Accounting - a three-year Accounting diploma with majors in Financial Accounting and Corporate Procedure

National Diploma Cost and Management Accounting - a three-year Accounting diploma majoring in Financial Accounting and Cost and Management Accounting

Swedish Points - a points rating system applied to matriculation subjects used to determine admission to tertiary institutions

ABBREVIATIONS

ACT - American College Test

ANCOVA - Analysis of Covariance

ANOVA - Analysis of Variance

B. Comm. - Bachelor of Commerce

DET - Department of Education and Training

EPL - English Primary Language

ESL - English Second Language

GPA - Grade-Point Average

HSB - High school Bookkeeping

HG - Higher Grade

HSC - Higher School Certificate

HoD - House of Delegates

HSRC - Human Sciences Research Council

NDA - National Diploma Accounting

CMA - National Diploma Cost and Management Accounting

NPE - No previous exposure to Accounting

PE - Previous exposure to Accounting

SAT - Scholastic Aptitude Test

SG - Standard Grade

SPSS - Statistical Package for Social Scientists

UB - University Bursary Examination

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CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

The high failure rate at all levels of study among Accounting students at tertiary institutions is of great concern to all who are either directly, or indirectly, involved in tertiary education. This poor pass rate is demonstrated by the results of students registered on Accounting programmes at Technikon Natal and other tertiary institutions, Sawyerr (1993) and Samkin (1996). Of the students that registered for Accounting programmes at Technikon Natal in 1996, only 14,11% of these students completed the programme within three academic years of study.

According to Fresen and Fresen (1987) and Samkin (1996) amongst others, the South African matriculation examination results are used as the main criteria for admission to tertiary institutions. One of the reasons given for the poor pass rates at tertiary institutions, is that matriculation results do not accurately predict student success. The objective of this study is to determine if matriculation results are an accurate predictor of success in an Accounting programme.

This dissertation was framed against the background of a student study period of three years and student selection criteria, as laid down by the Department of Accounting, at Technikon Natal (refer to Table 4 for entrance requirements).

The majority of Technikons in South Africa use matriculation results as the basis for selecting students. To determine the extent of the emphasis placed on matriculation results as a criterion for admission to an Accounting programme, a survey was conducted among the thirteen Technikons in South Africa to ascertain the method of selecting students for an Accounting programme. Of the eleven responses received, seven of the Technikons indicated that they only use matriculation results as the entrance requirement. The other four Technikons used matriculation results as the initial selection tool followed by various types of testing. For example, the intermediate Battery Test, General Scholastic Aptitude Test and 16 Personality

Factor Questionnaire. Anecdotal evidence suggests, using any/all of these selection tests, as a predictor of success, was no better than the method of using matriculation results as an entrance requirement to the accounting programmes offered at these four Technikons. For example, according to the Mangosuthu Technikon Department of Accounting, the HSRC test was inadequate as a predictor of success resulting in the Technikon suspending it as one of the predictive tactics used.

1.2 STATEMENT OF THE PROBLEM

The objective of this dissertation is to determine whether matriculation examination results obtained by students are accurate as predictors of success over three academic years of study on Accounting programmes offered at Technikon Natal. The degree of success is measured by the mean number of subjects passed in the three academic years of study making up the Accounting programme.

1.3 STUDENT PASS RATES IN ACCOUNTING PROGRAMMES

The overall pass rates of students studying Accounting programmes at Technikon Natal, for the period 1996 - 1998, has declined according to Technikon records, as reflected in Table 1. The mean number of subjects passed by the students over their first, second and third years was three, five and six and a half subjects respectively. Over a third of the students left the programmes by the third year. Only 14.11% of the original intake completed the programmes within three academic years. At the beginning of the third year, only 104 (63.8%) of the 163 students originally registered remained in the programmes.

Currently, the management of Technikon Natal is attempting to obtain a pass rate of 60% in all its programmes. The pass rates obtained in the programmes under investigation in this study do not meet the Technikon goal. Sawyerr (1993) reported similar high failure rates at the University of Transkei. Of the registered B.Comm. students, 55,6% did not pass more than one subject in the first year of study.

Of the students entered the programme in 1996, refer to Table 1, a further 19 students completed the programme, i.e. passed all courses, in the fourth year of study (1999) and a further 27 students did so in the fifth year of study (2000). This may warrant restructuring the programme by increasing the number of years to complete it.

	First year 1996	Second year including first year 1997	Third year including first and second year 1998
Total number of subjects per year	5	9	13
Mean number of subjects passed	3	5	6,5
Number of students registered	163	129	104
% of original intake remaining on the programme	100%	79.14%	63.8%
Number of students passing required number of subjects	48	32	23
% of original student intake passing required number of subjects	29.45%	19.63%	14.11%

TABLE 1: Pass rate for Accounting students at Technikon Natal (1996 - 1998)

1.4 STUDENT SELECTION CRITERIA

Currently, matriculation results are the most readily available indicator against which the potential of students is measured. A number of studies have been conducted at Universities investigating the correlation between matriculation (or equivalent) marks and performance in an Accounting programme, such as Rowlands (1988), van Rensburg, Penn and Haiden (1998) and Hall (1992). There is a single published study by the Human Sciences Research Council (1985) conducted at

Technikons which dissipated its focus by looking at the whole Commerce Faculty and not only Accounting students. The HSRC study showed that the Technikon at which the student was registered is associated with the highest final achievement.

Most of the predictive research (Samkins (1996), Keef (1988) and Farley and Ramsay (1988) amongst others) investigated a correlation between overall matriculation results or subject/s studied for matriculation and the passing of certain subjects at tertiary level. The passing of Financial Accounting I and/or other individual subjects in a tertiary programme is not sufficient for success in the programme, as it is important that a student passes all subjects for which he/she is registered. By being successful (as defined by the institution) in their studies, the institution benefits by receiving the full government subsidy and the students benefit by passing. Hence, the importance of this study to Technikons in respect of entrance requirements being an accurate predictor of success in the completion of an Accounting programme.

1.5 LIMITATIONS AND WEAKNESSES OF THE STUDY

This dissertation defines success as the completion of an Accounting programme within three years of first registration (criteria of success as specified by Technikon Natal). The Accounting programmes under discussion consist of 13 subjects, all of which need to be completed in order to obtain a diploma. The three-year period has traditionally been the time period over which a student is expected to complete the Technikon Natal Accounting programme. Technikon Natal will not consider changing the programmes to run on a four-year basis, in the short term, as has been mooted by some tertiary institutions.

The type of schooling received, for example, Natal Education Department (NED), Department of Education and Training (DET) or House of Delegates (HoD) will not be considered as a factor in determining the students' final success in an Accounting programme. From 1992 onwards only one senior certificate qualification was standardised by the South African Certification Council. The certificate does

not state under which education department the student studied. Enquiries reveal that all of the examinations are set by the individual education departments and then moderated nationally by the relevant subject moderator to ensure a consistent standard across the education departments. The moderation of the examinations by the individual education departments may affect the results of research undertaken in this area.

At Technikon Natal the entrance requirements are standard irrespective of which matriculation examination the student wrote. While it is accepted that within each education department there may be differences between the standard of education, equally there are vast differences between schools within education departments. All matriculation results are considered equal when accepting students onto the programmes although differing matriculation standards may influence outcomes. This could be a weakness in research and/or selection procedures, and may influence the results of this research. However, differing matriculation standards are beyond the scope of this dissertation.

According to results obtained from Technikons regarding entrance requirements, none of the Technikons differentiate between education departments when accepting students.

The fact that all students were enrolled in the same Technikon may cause this study to be criticised on the grounds of insufficient student population diversity. There is scope for future multi-Technikon research similar to this study. However, Technikon Natal is the largest Technikon on the Eastern Seaboard and the third largest Technikon in the country with 10 052 enrolled students in 1998 (1997 : 10 380 students). In addition, the Technikon attracts students from a wide variety of cultural backgrounds and geographic locations so student population diversity was not regarded as a critical factor.

The population is from a single tertiary institution (Technikon Natal) and comprises

students who registered for their first year of study in 1996. These results are not necessarily representative of other tertiary institutions or students registered in years other than 1996.

The students in the study were lectured to by different lecturers for the same subject. Although a common syllabus was followed, the same tutorial work was done and the same tests and examinations were written, the influence of the lecturers may influence the results of this study.

The student population correlated approximately with the demographics of South Africa. The population comprised approximately the following percentages of each race group: 69% Black, 21% Indian, 9% Coloured and 1% White. The student population was approximately evenly distributed between males and females.

Factors that may impact upon the students' performance during their tenure at Technikon Natal, such as motivation, maturity or attitude to study were not considered. These changes were not a factor in the reviewed literature of Hall (1992) and van Rensburg, Haiden and Penn (1998). The fact that matriculation results may not be relevant to achievement in the second or third year of academic study has also not been considered. The foregoing aspects are beyond the scope of this study.

1.6 DIVISION OF THE DISSERTATION

Chapter 1 identifies the research problem. Chapter 2 reviews the relevant literature. Chapter 3 deals with the research approach and methodology used to conduct the research. Chapter 4 lists the results of the empirical work and analyses of the results. Chapter 5 interprets the data and draws conclusions regarding the findings together with discussing recommendations and future areas of study.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

The literature of the geographical divisions surveyed is reviewed under their respective headings. From the literature reviewed it is apparent that only a limited amount of rigorous research on the topic of matriculation results as a predictor of success has been conducted in South Africa. This is supported by Rowlands (1988), van Rensburg, Penn and Haiden (1988) and Hall (1992). Limited literature was found regarding the academic performance of Accounting students at Technikons. The HSRC report only reviewed the Accounting students as part of the larger Commerce faculty.

2.2 PREDICTIVE STRATEGIES

Swedish points and other measures are tested to determine if these measures are able to predict success in Accounting programmes offered at Technikon Natal.

2.3 GEOGRAPHICAL DIVISIONS

It is acknowledged that there are differences due to various factors between the Accounting education offered in other countries and South Africa. However, what is important is that problems regarding secondary education results being a predictor of success in tertiary Accounting education are being experienced in other Western countries. The paramount issue here is that while research in other countries does not necessarily translate to South Africa's unique educational problems, foreign research on the predictive value of secondary level examination results, highlights important issues and principles relevant to this country.

PREDICTIVE STRATEGIES

2.4 SWEDISH POINTS

Due to the lack of literature regarding Swedish points and the performance of

Accounting students, the use of Swedish points in other areas of tertiary study was considered. The Swedish points are allocated on the basis shown in Table 2.

Symbol	Rating	
	Higher Grade	Standard Grade
A	8	6
B	7	5
C	6	4
D	5	3
E	4	2
F	3	1
G or lower	0	0

TABLE 2: Swedish points rating system

This scale of points is used by many tertiary institutions in South Africa to determine entrance to programmes. Some institutions apply a weighting to certain subjects, such as doubling the Mathematics and English marks. In the Department of Accounting at Technikon Natal no weighting is applied to subjects and this convention is followed in this study. If weighting had been applied to certain subjects, it may have resulted in a more accurate predictor of success, however this issue was not investigated in the current study. For example, a student achieving a Higher Grade D in each of six matriculation subjects will earn 30 Swedish points.

Fresen and Fresen (1987) studied students who were registered in the Faculty of Commerce at the University of the Western Cape. The results of this study did not differentiate between the degrees offered within the faculty. The correlation between weighted Swedish points and the passing of Business Statistics in the first year at University was investigated. The Swedish points were weighted by doubling the scores of the two best subjects. It was found that Swedish points and the first year pass rate in Business Statistics were strongly correlated.

Behr (1985) undertook research at the University of Durban-Westville to determine the predictive value of matriculation results, represented by weighted Swedish points and the number of first year subjects passed. Scores for English, Mathematics and the best of either Biology or Physical Science were doubled, the score for the best remaining subject was weighted 1,5 times and the remaining two subjects were not loaded. The study comprised 233 Bachelor of Arts students and 108 Bachelor of Science students. Behr's study showed that at least 72% of success in first year studies is attributable to knowledge gained at high school.

Jackson and Young (1987) studied the correlation between weighted Swedish points, the study of matriculation Biology and English and the final first year results in General Biology I. The weighting used the scores for Mathematics and the best of Biology, Physical Science or Physiology which were doubled. The sample consisted of 199 students registered for a Bachelor of Science degree at the University of the Witwatersrand. The strongest correlation was found between Swedish points and the passing of General Biology I ($r = 0.55$, $p = 0.0001$). However, correlations of the Swedish points of students that missed the cut-off of 46 points and then were admitted after writing a series of tests were found to be of little value in predicting success ($r = 0.03$, $p = 0.5466$).

These studies indicate that Swedish points correlate significantly with success in the first year subjects. However, Jackson and Young (1987) found that for students with less than 46 Swedish points, Swedish points were not a reliable indicator in predicting success.

2.5 OTHER PREDICTIVE MEASURES

Samkin (1996) considered whether matriculation results should be the sole admission criteria to a first year Accounting programme at the University of Durban-Westville. The sample studied comprised students who had matriculated through an education department controlled by either the Department of Education and Training (DET) or House of Delegates (HoD).

The first correlation was between overall matriculation results and final results in Financial Accounting I. A weak positive relationship was found for both DET ($r = 0.348$) and HoD students ($r = 0.538$). The variance in final Accounting results explained by the overall matriculation result was 12.1% for DET students and 28.9% for HoD students. Badsha, Blake and Brock-Uten (1986) reached a similar conclusion in their studies of a group of 451 first year medical students. For the DET students, overall matriculation results explained only 13% of the variance in the first year final Anatomy/Physiology examination.

The second correlation tested by Samkin (1996) considered the relationship between matriculation English, Mathematics and Accounting and Financial Accounting I results. Overall, Mathematics and Accounting provided more reliable indicators of success than did English. For HoD students, 35.4% of the variance is explained by these three subjects and individually Mathematics and Accounting appear to be the best predictors. For the DET students, matriculation English, Mathematics and Accounting do not predict significantly the variance in the final Accounting I result.

Samkin's third correlation selected the English Reading and Numerical Comprehension tests from the Academic Aptitude Test. These two tests were shown not to be good predictors of the final Accounting result for DET students. However, for HoD students they were found to be reliable predictors of success.

Ayaya (1996) studied students enrolled in a Bachelor of Commerce (B.Comm.) degree at the National University of Lesotho. A randomly selected sample of 90 students who had registered at the University between the academic years of 1982 and 1992 was drawn. Ayaya selected 29 variables and sought to determine which combination of variables would best predict success in the degree. The predictor variables covered items such as age, marital status and type of sponsor, to marks obtained in art subjects and practical philosophy.

The results of a stepwise multiple regression model showed five predictor variables which have a significant influence on performance, namely; symbol obtained in Cambridge Overseas Senior Certificate /General Certificate Examination, overall weighted mean marks obtained in first year examinations, Elements of Economics, Introduction to Law and Communication Skills in English. The importance of Communication Skills is particularly relevant to this dissertation. For the students in Ayaya's study, and the majority of the student population in this dissertation, English was not the mother tongue. The importance of good English skills, both verbal and written, to success in academic performance is highlighted as these variables combined, explained 47% of the total variability in performance.

Sawyer (1993) performed a three year study of the failure rate of first year students at the University of Transkei. The 2 591 students were grouped into five categories based on matriculation results. A "failure" was defined as a student who has passed only one course or less at University. The failure rate in first year was exceedingly high in all programmes and declined in subsequent years of study except in the faculties of Commerce and Science. The overall failure rate in first year was 53,61%. The failure rate for first year B.Comm. was 55,6%. In the second and third years the failure rate for B.Comm. students was 33,7%.

Sawyer further analysed the failure rate according to overall matriculation symbol obtained. The students with a 'C' symbol and above had consistently lower failure rates than those with other symbols irrespective of the degree programme. The students with a symbol below an 'E' tended to have the highest failure rates. This indicates that aggregate matriculation results did have predictive value. This is in agreement with the HSRC report.

Skuy, Zolezzi, Mentis, Fridjhon and Cockcroft (1996) studied a small group of 26 students registered in a Pre-University Bursary Scheme at the University of the Witwatersrand. Eighteen DET students in the sample were defined as "educationally disadvantaged" whereas the other eight students from high schools,

other than those controlled by the DET, were not considered educationally disadvantaged.

The students were subjected to a battery of static tests to assess current levels of functioning in the areas of intelligence, academic performance and motivation. A battery of process tests made use of a learning-orientated approach to test and assess the cognitive processes involved in various task performances.

Most of the static and process-orientated measures produced moderate to high correlations with the performance of the advantaged students. For the disadvantaged group there were very few significant or near-significant correlations between academic success and predictor measures.

Skuy et al reached the conclusion that matriculation results were not a reliable predictor of academic success for disadvantaged students. For the advantaged students matriculation results were not significantly related to success either. However, the static and process-orientated measures did produce high correlations for this group of students. The percentage of variance of University performance explained by matriculation results was a low 20%. Despite these findings, matriculation results are still used almost exclusively as an entrance requirement into South African tertiary institutions.

Samkin (1996) and Skuy et al (1996) found a very weak correlation between overall matriculation results obtained by DET students and their performance at a tertiary level. Ayaya (1996) also found that matriculation results were not the best predictors of success, and identified other predictor factors, such as Elements of Economics and Introduction to Law, that were of greater use than those currently employed by tertiary institutions. Matriculation results, however, have traditionally been used as the main criterion for acceptance into tertiary institutions.

With the exception of Sawyerr (1993), it would appear that overall matriculation

results or single subjects studied at matriculation level, are not suitable predictors of success for students from educationally disadvantaged or advantaged backgrounds.

GEOGRAPHICAL DIVISIONS

A geographical division is evident in the literature reviewed, i.e. Southern Africa, Australasia, United Kingdom and the United States of America. These divisions determine if the results obtained from the reported research apply to this study.

2.6 SOUTHERN AFRICA

2.6.1 Schooling System

The South African schooling system comprises 12 years of schooling. The matriculation examinations are written at the end of the final year of schooling and these examinations require the student to write English and a minimum of four other subjects. The Accounting syllabus comprises mainly Financial Accounting topics. Management Accounting is covered in a section on budgeting. Information systems are incorporated into topics where applicable.

2.6.2 Literature Reviewed

The Human Sciences Research Council (1985) produced a report investigating the use of differential entrance requirements into tertiary institutions. The report considered entrance requirements based on matriculation results and other factors as predictors of success in Universities, Technikons, Teacher Training Colleges and Nursing Colleges.

The report considered the results from 16 Universities and 9 Technikons within South Africa. The sample consisted of 1 142 students in the B.Comm. field of study at Universities and 200 students in the commerce and management field of study at Technikons.

For the Universities, the Bachelor of Commerce (B.Comm.) degree was broadly used for analysis and included Bachelor of Economics, Bachelor of Economic Science and Bachelor of Accountancy. With the Technikons the category of national diplomas in commerce and management were used and included administration, secretarial practice, journalism and tourism. Thus, the report did not consider Accounting degrees and diplomas as a separate category. Only full-time students were involved in the investigation.

For the Universities, school aggregate appeared to be the strongest explanatory variable of final achievement. If the first and second language are excluded from the school aggregate, the correlation is even stronger. Further analysis indicated a relationship between school aggregate, tertiary institution at which the student was enrolled and year of matriculation in the prediction of final achievement.

Achievement in school subject groups was used as predictors of success in degree programmes. For the B.Comm. field of study, Biology and the subject group that contained Economics, Business Economics and Accountancy were found to be good predictors of success.

From the analysis of the Technikons, the Technikon where the student was registered was the strongest predictor of success. School aggregate was the second best predictor of success. Within the school subject groups, those subjects in the group that contained Accounting and Business Economics emerged as a predictor of success.

The overall findings of the research indicate that in the majority of cases, school aggregate contributes the most towards explaining the variation in tertiary study success. Secondly, Standard 10 achievement in a particular combination of school subjects relevant to the tertiary field of study is reasonably able to predict successful tertiary study.

2.6.3 Accounting Studied at School

Rowlands (1988) undertook a study at the University of Natal (Durban) to determine whether students who had studied Accounting as a matriculation subject had an advantage in Financial Accounting I, over those who had not done so. Rowlands analysed the results of 227 students over a three year period (1985, 1986 and 1987) who had registered for Financial Accounting I. A comparison of the Swedish points of Accounting students who had previous exposure to Accounting (PE) and students who had no previous exposure to Accounting (NPE) was done. This was to ensure that the differences in performance examined in the second stage were the result of prior Accounting exposure and not differences in initial ability. Except for one of the years, there was no significant difference between the Swedish points of the two groups.

In the second stage of the research, it was found that the PE students initially scored significantly higher than the NPE students in the tests and assessments conducted during the year. However, the difference between the two groups narrowed with each successive test. In the year end examinations, the mean scores of the PE students was higher, but the difference in performance between the two groups was not significant.

In Rowlands' second research design, an analysis of covariance (ANCOVA) was used to control for the effect of student ability which might influence results. Ability was measured by the Swedish points obtained. Again, it was found that the PE students outperformed the NPE students in all tests and examinations other than the year end examinations. The hypothesis that there was no difference in results between the PE students and NPE students for the year end examinations, was accepted, with the exception of the 1986 cohort. The difference between the PE and NPE students, though initially large, was not significant enough by the end of the year to conclude the PE students had any advantage over the NPE students.

Van Rensburg, Penn and Haiden (1998) studied the results of 1 217 University of

Natal (Durban) students who wrote the final year end examination in Financial Accounting I, and the results of 491 students who wrote the Financial Accounting II examination. Their conclusion regarding performance in Financial Accounting I supports the findings of Rowlands (1988): students who had studied Accounting as a matriculation subject had an initial advantage in tests and assessments in Financial Accounting I, however, by the year end examination this difference was not significant.

When considering Financial Accounting II, the NPE students slightly outperformed the PE students: the NPE students had a mean mark 2,7% higher for Accounting II, than the PE students. By the end of the second year of study, other factors such as, the student's academic effort at University and overall school level academic performance, became more relevant to academic success (Van Rensburg et al (1998)).

Hall (1992) also investigated the relationship between results obtained at high school in Accountancy and University performance in Financial Accounting I, II and III at the University of Natal (Durban). The students who had studied Accounting as a matriculation subject were at an advantage in Financial Accounting I, but from Financial Accounting II onwards there was no discernable difference in performance.

The above research suggests that the study of Accounting as a matriculation subject does not enhance a student's ability to pass the final Financial Accounting I examination at University. This could also suggest that other factors happening at University or Technikon could influence student success. The effects of Accounting, as a matriculation subject, did not influence the second and third years of student study. Other measures, such as overall academic performance at high school or aptitude testing, need to be considered as alternative indicators of success to passing Financial Accounting I.

2.7 AUSTRALASIA

2.7.1 Schooling System

Australasia was used as both Australia and New Zealand have 12 years of schooling which is the same number of years as South Africa. In New Zealand the school certificate examinations are written at the end of Grade 12 and these examinations are organised on a national basis. Students are examined in five subjects with English being the only compulsory subject. The curriculum of the accounting examination comprises: Financial Accounting (60%), Management Accounting (20%) and Accounting Information Systems (20%).

In Australia the Higher School Certificate (HSC) is written at the end of Year 12. Entry to Australian universities is determined by using the sum of the marks from the students' four best HSC subjects, plus 10% of the marks in any further HSC subjects. The HSC Accounting syllabus consists of analysis and interpretation of accounting information and conceptual issues underlying Accounting, as well as recording and reporting issues.

2.7.2 Literature Reviewed

In order to investigate the effect of highest level of previous study in Accounting, Mathematics, English and Economics on performance in an Accounting course, Keef (1988) collected data on 435 students registered at the Victoria University of Wellington for a first level Accountancy course. The results of Keef's study indicate that prior study of Accounting has no effect on course performance ($p = 0.63$). These findings are consistent with South African studies conducted by Rowlands (1988) and van Rensburg et al (1998).

Students with prior study of Mathematics had a negligible advantage over those without Mathematics ($p = 0.37$). Previous study of Economics had an influence on overall course performance, but more particularly in the Management Accounting section ($p = 0.04$). The effect of previous study of English was found to be negligible.

Farley and Ramsay (1988) investigated the impact of high school study of Accounting on the performance of 1 073 students in a first year tertiary Accounting course at Purdue University. This study was conducted over four years. The students had either two years' high school Accounting or no high school Accounting. The conclusion was that the duration of high school Accounting study offers a determinant of success in the first year of a tertiary Accounting programme. In response to the study by Farley and Ramsay (1988), Keef and Hooper (1991) investigated whether prior study of Accounting in either Grade 11, 12 or 13 had a positive effect on performance in a first level University Accounting course. The study covered the results of 754 students registered over two academic years at Massey University. General academic ability was controlled for using the performance in the School Certificate examinations of English and Mathematics. Accounting studied in Grades 11 ($p's > 0.66$) and 12 ($p's > 0.38$) did not carry any significant benefit in the first level course at University.

Accounting studied in Grade 13 ($p's < 0.01$) did provide some benefit. Keef and Hooper postulated that this was because there is an overlap in the curricula between Grade 13 and the first level University Accounting course. At a number of South African tertiary institutions there is also considerable overlap between the matriculation Accounting syllabus and the Financial Accounting I syllabus. To apply Keef and Hooper's finding to the South African situation would imply that students who have studied matriculation Accounting should have an advantage in Financial Accounting I over those students who have no prior study of Accounting. However, the studies of Rowlands (1988) and van Rensburg et al (1998) concluded that there was only an initial advantage for these students. By the end of the first year this advantage had diminished considerably.

Keef (1992) undertook a further study similar to that of Farley and Ramsay (1988) to determine whether the *amount* of prior study of Accounting, as opposed to the *level* of study, had an effect on university results. The conclusion reached by Keef is contrary to that reached by Farley and Ramsay (1988). Keef concluded that

students who had either one or two years of high school Accounting did not have an advantage over those students who had not studied Accounting at high school. This finding is, however, in agreement with the conclusion reached by Keef and Hooper (1991). Accounting studied in Grades 11 and 12 did not confer any advantage whilst studying first level Accounting at a tertiary institution.

Keef (1992) investigated whether the concurrent study of Economics, Mathematics (either Calculus and/or Statistics) or English carried any benefit in the New Zealand University Bursaries (UB) Accounting examination. This nationwide University entrance examination is taken by pupils in their last year of schooling (Grade 13). The study of English carried no significant benefit in the UB Accounting examination. The concurrent study of Economics provided a small advantage. This result is consistent with Keef's earlier study (1988). The study was unable to test the hypothesis relating to a specific Mathematics course because of the low popularity of the Mathematics courses. However, of interest is the fact that performance in the Accounting examination was affected by a combination of Economics and Mathematics, particularly the Statistics course. Statistics taken in the absence of Economics was linked to a poor result in the Accounting examination.

Three of the four Australasian studies reviewed, concluded that Accounting studied at high school level did not confer a positive benefit at tertiary level. Results from the studies by Keef (1988, 1992) and Keef and Hooper (1991) are consistent with the South African studies undertaken by Rowlands (1988) and van Rensburg et al (1998) which showed that the study of Accounting at high school results in an initial, but, statistically insignificant advantage in first year tertiary Accounting courses.

2.8 UNITED KINGDOM

2.8.1 Schooling System

The United Kingdom education system also comprises 12 years of schooling. Ordinary grade Accounting examinations are taken in the fourth year of high school study and the Higher grade Accounting examinations in the sixth year of high school

study. The Higher grade Accounting syllabus covers: Accounting Theory, Accounting Systems, Financial Accounting and Managerial Accounting. The Ordinary Grade syllabus covers: sources and processing of data, final accounts and interpretation and analysis of accounting information.

2.8.2 Literature Reviewed

Mitchell (1985 and 1988) conducted two studies comparing the performance of first level Accounting students at the University of Edinburgh who had studied high school Accounting, with those who had no prior exposure to Accounting. The 1985 study covered the 1983/84 academic year and consisted of 270 students. The 1988 study covered the 1984/85 academic year and consisted of 176 students.

The first hypothesis tested in both studies grouped the students according to their level of high school Accounting. The Higher Grade students had two years of high school Accounting study and the Ordinary Grade students only one year of study. The conclusion reached for both years was the same as that of the South African studies conducted by Rowlands (1988) and van Rensburg et al (1998) and the New Zealand study by Keef (1992). There was no significant difference between the final marks of the two groups. The research was not extended beyond the first year of study.

In the second hypothesis for both studies, Mitchell analysed the test results of the students. In the quantitative based tests, the high school Accounting students performed better than their non high school Accounting counterparts. In the qualitative based tests, however, there was no significant difference between the groups.

Mitchell also considered different standards of Higher Grade high school Accounting. A comparison of 'A' grade students with 'B' grade students found that 'A' grade students produced significantly better results in the quantitative work only. With the Higher Grade students, the effect of having a one year break in the study

of Accounting between high school and University was examined. There was no significant benefit for those students who had continuity between their high school and University study in Accounting.

In the third hypothesis tested in the 1985 study, Mitchell compared the results obtained by the Higher Grade students with the Ordinary Grade students, and the Ordinary Grade students with the students who had no high school Accounting qualification. There was a significant difference between the Higher Grade students and the Ordinary Grade students in the results of the first class examination. This is again in agreement with Rowlands (1988) and van Rensburg et al (1998) who found that the high school Accounting students had an initial advantage which had diminished by the year end examination.

The third hypothesis that Mitchell tested in the 1988 study was that there was no significant difference between those students who had high school Mathematics and those who did not. This hypothesis proved true in all cases except the Management Accounting quantitative examination. Mitchell's final conclusion was that students without high school Mathematics and Accounting are more likely to underperform in quantitative Accounting assessments. These students should therefore be provided with extra help to overcome this deficiency.

Bartlett, Peel and Pendlebury (1993) studied a number of different variables in an attempt to explain performance differences of 39 students over the three years in an undergraduate Accounting degree at the University of Wales College in Cardiff. They considered factors such as educational background, demographic characteristics and financial/investment characteristics. Bartlett et al used the results of the first year Financial Accounting and Management Accounting examinations and compared these with the corresponding third year results.

They found that, except for the initial test, students who possessed an 'A' or 'O' level in Accounting, outperformed those without these qualifications. The prior

study of Accounting did not appear to confer any significant advantage on students in either first or final year examinations.

Students who passed Economics at 'A' level, on average, significantly outperformed other students in all examinations except the third level Management Accounting examination. This finding is consistent with that of Keef (1988) and Ayaya (1996) where the course "Elements of Economics" was found to be a predictor of success. Students who had an 'O' level for Economics did not have a similar advantage. Study of Mathematics at 'A' level did not have a significant effect on examination performance. This is also consistent with previous research by Mitchell (1988) and Ward et al (1993).

The best predictor of overall University success was found to be the student's performance in first year University examinations. Ayaya (1996) also determined that the marks obtained in the first year examination would serve as a reliable predictor variable. Bartlett et al (1993) concluded that predictors of performance in an Accounting degree could not be found in background characteristics that students possessed on entering the University. Factors that were acquired or developed by the student during the three years of tertiary study were better predictors of success. Factors that were important included, motivation, changes in attitude and maturity.

The results of the United Kingdom studies also indicate that Accounting studied at high school conferred only a small initial advantage to further studies in Accounting and this advantage is soon negated. School study of Mathematics does not affect performance. 'A' level study of Economics and the number of subjects passed after one year of tertiary study were found to be the best indicators of performance.

2.9 UNITED STATES OF AMERICA

The records of the United States of America available to the researcher are the most complete of the geographic divisions reviewed.

2.9.1 Schooling System

In the United States of America the schooling system also consists of 12 years of schooling. Cognisance needs to be taken of the following factor with regard to the American studies. At high school the term Bookkeeping is used instead of Accounting and is usually only a single year course. The subject material covered is the Accounting cycle and basic financial statement preparation. As may be seen from the high school syllabi of the other geographical divisions discussed, the scope of their syllabi is broader than pure Bookkeeping.

With regard to tertiary studies, the Accounting courses in the United States were of only one semester's duration. In the other three regions discussed, the first level Accounting course at tertiary institutions spans a full academic year.

2.9.2 Literature Reviewed

2.9.2.1 Accounting Studied at School

Baldwin and Howe (1982), at the Arizona State University, compared the performance of a sample of 116 students who had studied high school Bookkeeping with 116 who had no previous study of Bookkeeping. The conclusion reached was the same as studies undertaken by Rowlands (1988), van Rensburg et al (1998) and Keef (1992) that students who had studied Bookkeeping at high school had an early advantage over the students who had not. At the end of the year however, there was no statistically significant difference between the two groups ($p = 0.642$). In fact, the non Bookkeeping students performed marginally better in the final examination than the high school Bookkeeping students.

Baldwin and Howe also considered the deregistration rate and pattern of deregistration for the two groups of students. To test this hypothesis, the population was increased to 489 students who wrote at least one Accounting examination. The comparative deregistration rates of both groups of students were nearly identical: 16% of the students who had studied high school Bookkeeping

and 17% of those who had no prior study of Bookkeeping deregistered from the course. However, the pattern of deregistration varied between the two groups. The non Bookkeeping students tended to deregister earlier than the high school Bookkeeping students.

Schroeder (1986) investigated the amount of previous Accounting course work studied by students registered for a first college course in Accounting at the Bowling Green State University. This is in contrast with previous studies discussed which grouped students according to the presence or absence of previous Accounting studies. Schroeder used three levels of high school Bookkeeping (HSB) to group students: 238 students had no HSB, 161 students had up to and including one year of HSB, and 77 students had more than one year of HSB course work. The mean American College Test (ACT) scores of the three groups were not statistically significant implying that the academic ability of each group was similar.

The probability of the student completing the Accounting course and examination performance based on the HSB level identified was investigated. The presence of any prior HSB increases the probability of the student completing the course. This is in agreement with the results of Baldwin and Howe (1982).

Schroeder also studied the deregistration rate of students on the course. Schroeder found that 23% of the students who had no HSB deregistered from the course compared with 3% of the students who had over one year of HSB. The deregistration rate decreases as the level of HSB course work increases. These findings contradict that of Baldwin and Howe (1982) where the deregistration rates between the two groups of students differed by only 1%.

In examination performance, the results of the non HSB, and one year or less of HSB, were significantly different in the first mid-term examination only. Thereafter, the results obtained by these two groups were almost identical. The group of students with over one year of HSB consistently outperformed all other groups of

students in all the examinations written during the course. This research was not extended beyond the first year of study.

The findings of Schroeder are not in agreement with those obtained from the South African studies undertaken by Rowlands (1988) and van Rensburg et al (1998). A South African student with Accounting as a matriculation subject would have studied the subject for at least three years. To extrapolate Schroeder's findings to the South African situation would imply that there should be a difference between the students who had studied Accounting at high school and non Accounting students. However, the results of South African studies indicate that this is not the case.

2.9.2.2 Tertiary Performance Based on Overall Secondary School Results

Booker (1991) studied the relationship between American College Test (ACT) scores and performance in Intermediate Accounting in a sample of 40 students at the Jackson State University. Booker divided the students into four groups based upon their ACT scores. The findings of this study reject the hypothesis that there is no difference between the Intermediate Accounting results of the four ACT groups ($p = 0.00$). Booker concluded that there is a direct correlation between the ACT scores and semester averages obtained by the students. Although a significant difference in Intermediate Accounting results was observed across the four ACT score groups considered, the difference between adjacent groups was not significant. The regression results failed to account for 62% of the variation between the variables ($r^2 = 0.38$).

Ward, Ward, Wilson and Deck (1993) conducted a study that examined not only the Composite ACT scores, but also Mathematics and English ACT scores as indicators of performance in Principles of Accounting I of students registered at two major Universities in the southern USA. The number of student participants in the sample was 60. The results of the Composite ACT scores and performance in Principles of

Accounting I was significant for students achieving an 'A' or 'B' mark in the course. There was no significant difference between the students who obtained a 'C' and those failing the course ($p = 0.0002$). Sawyerr (1993) also found that students with a 'C' or higher performed consistently better than students with lower symbols.

With regard to the Mathematics ACT scores, only students achieving an 'A' for the Intermediate Accounting course had a significantly higher Mathematics ACT score. The hypothesis of 'no difference' among Mathematics ACT scores is rejected ($p = 0.033$). With the English ACT scores there was no significant difference between the groups ($p = 0.813$). In conclusion, Ward et al (1993) agreed with Booker's findings (1991) that Composite ACT scores alone, may not be sufficiently accurate predictors of performance.

Gist, Goedde and Ward (1996) examined the influence of mathematical skill and several other factors on the performance of a group of 152 students enrolled for Accounting Principles I at an historically Black University on the east coast of the USA. Scholastic Aptitude Test (SAT) scores and high school grade-point average (GPA) were used. Both measures were positively and significantly related to performance in the Accounting course ($p < 0.05$). Students with higher SAT scores and GPAs do better in their Accounting studies than those with lower scores. This finding is consistent with those of Booker (1991), Ward et al (1993) and Sawyerr (1993), that students with higher secondary school results tend to do better at tertiary institutions.

Gist et al (1996) also sought to determine whether student performance in Mathematics/Algebra/Calculus related to performance in Accounting Principles I. Students with a 'C' or above grade in Calculus outperformed the other students in the course ($p = 0.05$). Algebra and Mathematics were not found to be significant. This finding is consistent across the research, in that prior study of Mathematics does not appear to confer any advantage on the student in the first year of an Accounting programme. The relative importance of each of the factors studied was

also investigated. The most important factor determining success was higher scores in college GPAs and SATs.

Eskew and Faley (1988) developed a model to explain student examination performance in the first college-level Financial Accounting course. The model was tested on a sample of 352 students at the University of Purdue. The results of the model suggest that ability (measured by SAT scores), recent academic performance (measured by high school grades and college grades), effort/motivation (measured by the number of voluntary quizzes the student took during the course), related previous exposure (measured by the number of semester hours of completed college-level courses), college-level Mathematics and Statistics courses and pre-college study of Bookkeeping/Accounting, are all significantly related to examination performance in this first level college Financial Accounting course. The positive effect of the pre-college study of Bookkeeping/ Accounting reported by Eskew and Faley is in contradiction with other research reported by Keef (1992), Baldwin and Howe (1982) and Rowlands (1988).

The conclusion reached in the above studies was that students with higher scores in college GPAs and SATs tend to do better in the first college-level Financial Accounting course. This is in agreement with the South African studies of Behr (1985), Jackson and Young (1987) and Fresen and Fresen (1987) where Swedish points obtained in matriculation were found to be the best indicators of performance in first year tertiary studies.

2.9.2.3 Other Predictive Factors

Doran, Bouillon and Smith (1991) sought to identify significant determinants of student performance among 552 Accounting Principles I students and 434 Accounting Principles II students at the Iowa State University. The results obtained from this research are similar to those of Eskew and Faley (1988), which show that measures of academic performance and aptitude are important determinants of performance in the Accounting courses. The results of the first examination written

in Accounting Principles I was found to be the single most important predictor of performance on subsequent examinations in both Accounting Principles I and II ($p < 0.01$ in both cases).

Prior study of high school Accounting/Bookkeeping was positively related to performance in Accounting Principles I, but negatively related to performance in Accounting Principles II. This is in agreement with the findings of Rowlands (1988) and van Rensburg et al (1998) that students who had studied Accounting at high school had a slight initial advantage.

Doran et al (1991) sought to develop a model that could be used to predict success in Principles of Accounting I and II. The model considered variables such as: gender of the student, mark obtained in the first test written and the ACT score obtained by the student. The model was able to predict student success or failure with approximately 87% accuracy in Accounting Principles I and 89% accuracy in Accounting Principles II.

Danko, Duke and Franz (1992) conducted a two year study of 892 students enrolled in Intermediate Accounting I at the San Francisco State University. The following independent variables were considered to predict success in Intermediate Accounting I:

- (a) overall college GPA;
- (b) course grade in Introductory Financial Accounting;
- (c) time elapsed between the completion of Accounting Principles and Intermediate Accounting I; and
- (d) grade obtained on an internally generated diagnostic examination.

The most highly correlated independent variables were the grades in GPA ($r^2 = 0.3557$), diagnostic examination score ($r^2 = 0.1908$) and grade obtained in Introductory Financial Accounting ($r^2 = 0.1569$). The time elapsed between the completion of Accounting Principles and Intermediate Accounting I was not

significant ($r^2 = 0.0094$). Mitchell (1988) also concluded that the lack of continuity in the study of Accounting between high school and tertiary level did not adversely affect performance.

A model was developed which employed a linear combination of grades in GPA and diagnostic examination scores. This model was able to predict with 72.4% accuracy which students would be successful in passing Intermediate Accounting I.

A second model was developed which predicted that students would be successful in Intermediate Accounting I if they had an overall GPA of 2.7 or higher, or if they had a diagnostic examination score of 55% or better. Students who did not meet these scores were predicted to be unsuccessful. This model had a predictive accuracy of approximately 70%. If either of the models had been employed to screen potential students, the first model would have eliminated 60% of the students who were unsuccessful and the second model 50% of the students who were unsuccessful in Intermediate Accounting I. However, of those students predicted to be unsuccessful, 14.3% were successful in Intermediate Accounting I. The effect of not admitting these students could not be calculated.

College GPAs alone or in conjunction with other measures such as diagnostic examination scores or results in the first level of Accounting appear to be the best indicators of success.

2.9.2.4 Achievement Tests Used to Predict Success

Zachry (1990) administered an internally developed achievement test written at the beginning of each semester to a group of 75 Intermediate Accounting I students (test group) at the Midwestern State University. The results of the tests were discussed with the class in depth, and students were encouraged to make an appointment with a faculty member to discuss their individual results. The results of the achievement tests were used to encourage students to do better rather than using it as a counselling tool. The objective was to compare the performance in

Intermediate Accounting I of the 75 students (test group) who wrote the achievement test with the performance of the 116 students (control group) who did not write the test.

Regressions were run on the test group to determine the best predictor of performance in Intermediate Accounting I: the achievement test or the first regular examination. The results of the regressions were as follows: $r^2 = 0.52$ for the achievement test alone, $r^2 = 0.55$ for the first regular examination and when the variables were regressed together, $r^2 = 0.70$. Doran et al (1991) also found that the results obtained in the first regular examination were an important predictor of future performance in Accounting courses.

The course completion rate of students writing the achievement tests was 62%, considerably higher than the 51% of the students who did not write the achievement tests. This higher percentage exhibited by the test group is believed to have occurred due to these students being provided with a discussion on their achievement tests results as well as opportunities for additional counselling. An achievement test can be used as a positive counselling device to encourage students to do better. With proper counselling, a lower deregistration and failure rate could be achieved in Intermediate Accounting I.

2.9.2.5 Language as a Factor of Success

Ward, Wilson and Ward (1994) administered tests of common business and accounting vocabulary to black students registered in Principles of Accounting I and II at two major southern USA Universities. 89 of the students were enrolled at a predominately white University and 86 of the students at a predominately black University. Overall, 63.9% of the business terms were correctly matched and 36.4% of the accounting terms were correctly matched by the respondents. The students at the predominately white University scored 74.8% on the business terms and 48.1% on the accounting terms. The students at the predominately black University scored 63.2% and 25.1% respectively. The researchers' possible explanation for

this was that students with greater prior exposure to business related activities tended towards the white University.

Patkowski, Fox and Smolaka (1997) compared the mean grades of 968 English Second Language (ESL) students with those of 5 579 English Primary Language (EPL) students enrolled in a number of different courses at the City University of New York. For most of the courses studied, the ESL students did as well as, and sometimes better than, the EPL students except for Business and Accounting courses. The result of this study indicates that some intervention in the form of remedial language classes should be considered to improve the performance of the ESL students in Business and Accounting studies. To corroborate this, Ayaya (1996) also found that Communication Skills in English was an important predictor variable for ESL students' success in an Accounting degree programme.

2.10 CONCLUSION

Despite the different education systems of the various countries discussed there is commonality in the research findings. Studies by Rowlands (1988) and van Rensburg et al (1998) in South Africa, Keef (1988,1992) and Keef and Hooper (1991) in Australasia, Mitchell (1985 and 1988) in the United Kingdom and Baldwin and Howe (1982) in the United States all found that Accounting studied at high school confers only a small initial advantage in the first year study of Accounting at a tertiary institution. Farley and Ramsay (1988) in Australasia and Schroeder (1986) in the USA were the only two studies that found the duration of high school Accounting study to be a determinant of success in the first year of a tertiary Accounting programme.

Studies in Southern Africa (Samkin (1996), Ayaya (1996), HSRC report (1985) and others), and in the United States of America (Booker (1991) and Gist et al (1996) and others), found that other measures such as the student's overall high school results were better indicators of performance in tertiary institutions.

A need for further study in the South African Technikons context was identified because of the lack of clarity surrounding the predictive ability of matriculation results that are used for entrance to tertiary institutions. The current study is relevant because it focuses on the performance of Accounting students registered at a South African Technikon over three academic years of study of an Accounting programme. The overall academic ability at high school, as well as the study of individual subjects such as Mathematics and Accounting, will be used as possible determinants of success over three academic years of an Accounting programme at Technikon Natal.

University of Cape Town

CHAPTER 3

DESCRIPTION OF THE STUDY

3.1 INTRODUCTION

The objective of this research is to examine the current entrance requirements to Accounting programmes offered at Technikon Natal, and to ascertain the reliability of these requirements, namely matriculation results, as predictors of success in the programmes. The need for such research is clear from the high failure rates currently experienced at Technikon Natal. Despite the fact that students meet the entrance requirements as stipulated by the Institution, the students completing the programmes within three years are a mere 13.5% of the students who registered for the first time in 1996.

The main focus of this study covers the performance of full-time students registered in the Department of Accounting at Technikon Natal for the National Diploma Accounting and the National Diploma Cost and Management Accounting in the years 1996 to 1998. Technikon Natal was used as the basis for this study as the data was available to the researcher.

3.2 STUDENT DEFINITION

For the purpose of this study, a student is defined as a full-time first year student who had not previously studied at a tertiary institution. Students who had applied for credits from a previous course or institution were excluded from the study as were students who were repeating first year subjects. Therefore the population consisted of a similar group of students regarding their prior exposure to tertiary study. Part-time students were excluded from this study because it is not possible to complete the Accounting programmes within three academic years on a part-time basis. This is because of timetable clashes and workload commitments.

The group of students selected for the present study entered Technikon Natal for the first time in 1996. The progress of these students was monitored over three

academic years. For this study only, prospective students who met the entrance requirements were registered for their chosen Accounting programme. No student who met the entrance requirements was turned away as there were sufficient vacancies in the programmes to accommodate all successful applicants. Since this study was conducted, demand for the programmes has exceeded the number of places available and prospective students that meet the entrance requirements used in this study have been refused entry to the programmes.

The majority of students participating in this study wrote their matriculation examinations at the end of 1995. A sample of 40 students was randomly selected to compare the performance of students who had matriculated prior to 1995 with the performance of students who had matriculated in 1995. The difference in performance between the two groups of students over the three years of the study was not significant, $p > 0.327$. Research conducted by Danko et al (1992) in the USA and Mitchell (1988) in the UK point to the fact that the lack of continuity in the study of Accounting between high school and tertiary level does not adversely affect performance.

The population consisted of 163 students comprising 119 NDA students and 44 CMA students. The CMA programme has fewer students than the NDA programme because Mathematics is a compulsory matriculation subject for entrance to the CMA programme, (refer to Table 4).

Students who registered for one of the programmes in 1996, and subsequently left the programme are considered to be non-returning students. The non-returning students have been included in the results of the statistical analysis conducted. This issue may be debatable, in that non-returning students have been included in this study in contrast to other studies where non-returning students have been excluded. However, in the opinion of the researcher, it is important that the results of all students be considered over the three-year period during which this study was undertaken. The reasons for students not returning are difficult to determine and

may include academic exclusion due to non-completion, as reflected in the Technikon records, of the required number of subjects at cut-off points in the programmes, financial difficulties, personal reasons or transfers to other diplomas. The students that met the abovementioned criteria were used to test the stated hypotheses, via the conducted statistical analysis.

3.3 ACCOUNTING DIPLOMAS OFFERED AT TECHNIKON NATAL

At Technikon Natal, two undergraduate Accounting programmes are offered, namely the National Diploma Accounting (NDA) and the National Diploma Cost and Management Accounting (CMA). The programmes are offered both on a full-time and a part-time basis.

CMA	NDA
Year 1	
Financial Accounting I End-User Computing Business Law Quantitative Techniques Cost and Management Accounting I	Financial Accounting I End-User Computing Business Law Quantitative Techniques English
Year 2	
Financial Accounting II Economics or Business Economics Internal Control and Code of Ethics Cost and Management Accounting II	Financial Accounting II Business Economics Internal Control and Code of Ethics Corporate Law
Year 3	
Financial Accounting III Corporate Law Taxation Cost and Management Accounting III	Financial Accounting III Corporate Procedures Taxation Cost and Management Accounting

TABLE 3: Subjects studied in each of the programmes

Both diplomas require the student to complete 13 subjects. Each of the diplomas consists of a prescribed subject package. The only optional subject is Economics or Business Economics in the CMA diploma. The prescribed subjects are shown in Table 3.

Workload requirements are similar for both programmes. Ten of the thirteen subjects are common to both programmes. The pass rates for the other three subjects are similar. For example, 86.4% of the CMA students passed Cost and Management Accounting I and 82.5% of the NDA students passed English.

3.4 ENTRANCE REQUIREMENTS

Entrance Requirements	Grade	CMA	NDA
English 1 st language or equivalent	HG SG	E D	E D
English 2 nd language or equivalent	HG SG	C B	C B
OR to qualify for entrance subject to English proficiency test	HG SG	D C	D C
AND Mathematics or equivalent	HG SG	E D	
AND EITHER Mathematics or equivalent	HG SG	N/A	E D
OR Accounting or equivalent	HG SG	N/A	D C
OR Matriculation exemption		N/A	

TABLE 4: Entrance requirements for the Accounting programmes offered at Technikon Natal

The entrance requirements for the programmes are shown in Table 4. For entrance into the CMA diploma, a minimum Mathematics marks of a HG-E or a SG-D is a compulsory entrance requirement in addition to the English requirement. The NDA diploma has an optional Mathematics entrance requirement and this is the only difference between the entrance requirements of the two diplomas.

The entrance requirements to both programmes have changed subsequent to the results obtained from this study. In addition to the entrance requirements shown in Table 4, it is also necessary for a student to have a minimum of 27 Swedish matriculation points. Anecdotal evidence suggests that the change in entrance requirements had a positive impact on the pass rates achieved by these student bodies.

CHAPTER 4

RESEARCH METHODOLOGY AND DATA ANALYSIS

4.1 INTRODUCTION

The primary aim of this chapter is to determine which explanatory variables (predictors) make a statistically significant contribution towards explaining the variation in the relevant dependent variables. The mean number of subjects passed, in each of the three academic years over which the study was conducted, are used as a measure of success.

4.2 STATISTICAL ANALYSIS

A number of statistical tests were conducted to analyse the data. The Statistical Package for Social Scientists (SPSS) was used to facilitate the analysis.

Descriptive statistics were used to assess the normality of the population. The mean, median, mode and standard deviation were calculated as measures of central tendency and dispersion. Pearson's Coefficient of Skewness was used to measure the extent to which a distribution is skewed.

Correlational analysis was used to measure the degree of correlation between the variables tested, using Pearson's Correlation Coefficient and the Coefficient of Determination. Student's T-tests were used to test the significance of the difference between groups of data. Where more than two groups were compared, Analysis of Variance (ANOVA) was used for testing the significance between the groups. The data for the Econornics hypothesis and Accounting, Mathematics and Economics hypothesis did not meet parametric assumptions as the student samples were of differing sizes. Mann-Whitney tests were used for these statistical evaluations. All testing was two-tailed and the level of significance was set at the 95% level.

4.3 HYPOTHESIS TESTING

A number of hypotheses were tested to determine if a statistically significant relationship could be found between the hypotheses and student success over three

academic years in the Accounting programmes offered at Teknikon Natal. Success was measured by the mean number of subjects passed by students in each of the three years of academic study.

4.4 DATA NEEDS AND COLLECTION

The data required were obtained from student record cards held on Teknikon Natal's central computer system. A student record card was printed for each student and the required data entered into the SPSS. The entry of the data was checked for accuracy. The following information for each student was entered: student number, number of Swedish points obtained, matriculation marks for Mathematics, Accounting, Economics and English, the subjects registered for in each of the three academic years of study at Teknikon Natal and the final result obtained in each of these subjects. The year-end and supplementary examination results were used to determine the mean number of subjects passed in each year of study. A pass mark of 50% was required in each subject. This mark was made up as follows: 40% course mark (comprising tests written during the year and assignments completed) and 60% final examination. It was possible for students to pass half a subject because Quantitative Techniques and Taxation had been modularised and semesterised.

4.5 RATING OF MATRICULATION SYMBOLS FOR STATISTICAL PURPOSES

The Swedish points system does not allocate discrete value to Higher Grade and Standard Grade symbols. For statistical purposes, in order to differentiate between, for example, a HG-C and a SG-A (both 6 Swedish points) the values shown in Table 5 were used to allocate values to the symbols obtained by students in the matriculation examinations. No weighting was applied to the subjects.

A number of students in the population had studied seven subjects at matriculation level. For these students their six best subjects were selected, however,

Mathematics, English and Accounting were used in the calculation of Swedish points obtained even if one of these subjects was the student's lowest mark. Some of the students had five matriculation subjects and these students are included in the population.

Symbol	Rating	
	Higher Grade	Standard Grade
A	12	11
B	10	9
C	8	7
D	6	5
E	4	3
F	2	1
G or lower or not studied the subject	0	0

TABLE 5: Scale for conversion of marks for statistical purposes

HYPOTHESIS ONE

4.6 SWEDISH POINTS

The first hypothesis tested considered the total Swedish points obtained by students in their matriculation examinations. Swedish points were used as a test of overall academic ability as opposed to performance in individual subjects. Twenty-six Swedish points were chosen as the cut-off point as this is the mean number of Swedish points obtained by students in the population. The mean was the most accurate measure of central tendency as it made use of every score in the distribution. The mean was not influenced by extreme values in the distribution because in the data set there were no extreme values. This is substantiated by the median value of 26 Swedish points. The median is the middle value of the data set. Therefore an equal number of values fall below and above the 26 Swedish points selected.

H_1 : Students who have 26 Swedish points and above will not perform better than those students who have less than 26 Swedish points

Let A_1 = the mean number of subjects passed after one year by students with ≥ 26 Swedish points

A_2 = the mean number of subjects passed after one year by students with < 26 Swedish points

B_1 = the mean number of subjects passed after two years by students with ≥ 26 Swedish points

B_2 = the mean number of subjects passed after two years by students with < 26 Swedish points

C_1 = the mean number of subjects passed after three years by students with ≥ 26 Swedish points

C_2 = the mean number of subjects passed after three years by students with < 26 Swedish points

The hypothesis for year one:

H_0 : $A_1 = A_2$

H_1 : $A_1 \neq A_2$

The hypothesis for year two:

H_0 : $B_1 = B_2$

H_1 : $B_1 \neq B_2$

The hypothesis for year three:

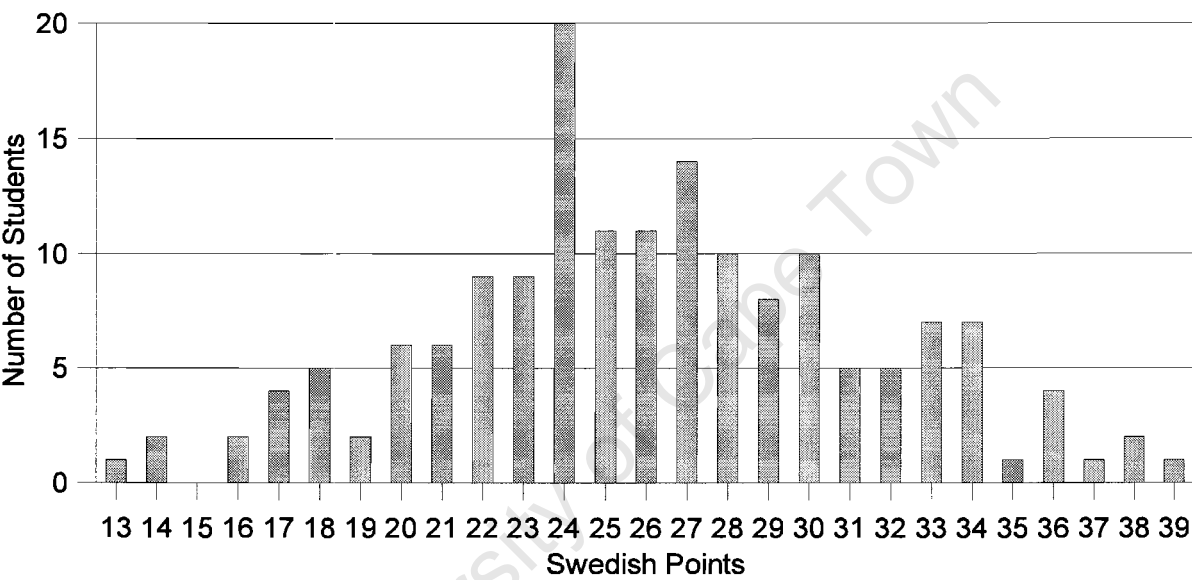
H_0 : $C_1 = C_2$

H_1 : $C_1 \neq C_2$

The Swedish points were allocated on the basis shown in Table 5. For the 1996 cohort, Swedish points were not applied in the selection of students. The entrance requirements for these students is shown in Table 3. A minimum requirement of 27 Swedish points and above in addition to other entrance requirements (Table 3) was

introduced for 1998 registrations in an attempt to limit the burgeoning applications to the programmes and select better quality students with better prospects for completing the course.

The Swedish points for the students in this study were normally distributed over the range as indicated by Pearson’s Coefficient of Skewness which is 0.05. The range of Swedish points was from a low of 13 Swedish points to a high of 39 Swedish points. The distribution of Swedish points is shown in Graph 1.



GRAPH 1: Distribution of students per Swedish points achieved

Of the original intake of 163 students, 16 students (9.82%) failed to pass any subjects in the three academic years over which this study was undertaken. A further 19 students (11.66%) passed two or fewer subjects. In terms of the Department of Accounting rules, these students were not allowed to register for a second year.

Students with points well in excess of the mean number of Swedish points failed to pass at least two subjects. The student with the highest number of Swedish

points (39) passed 5 subjects and the student with the lowest Swedish points (13) passed 5.5 subjects! One of the students with 18 Swedish points passed all 13 credits and the only student with 39 Swedish points did not complete the diploma.

4.6.1 Statistical Computations

The descriptive statistics for the study are as follows:

Mean	Median	Mode	SD	Skewness
26	26	24	5.281	0.05

TABLE 6: Descriptive statistics for Swedish points

The standard deviation of 5.281 is indicative of the wide range of Swedish points among students. The mean number of Swedish points obtained was 26 Swedish points which led to the selection of 26 Swedish points for the hypothesis.

Regression statistics are provided in Table 7. At the most only 0.202 of the variance in the mean number of subjects passed can be explained by the number of Swedish points obtained in matriculation. This was at the end of the second year of study.

	Year 1	Year 2	Year 3
r	0.443	0.45	0.416
r ²	0.197	0.202	0.173
slope	0.145	0.258	0.337
y-intercept	-0.680	-1.601	-2.221
p	0.272	0.140	0.154
S _e	1.553	2.715	3.900

TABLE 7: Regression statistics for Swedish points per year

After one year, the explained variance was 0.197 and decreased at the end of three years to 0.173. These low values of explained variation indicate that there is a weak relationship between the mean number of subjects passed in any of the three academic years of study and the Swedish points obtained in matriculation. The p values obtained also suggest that the relationship between the independent variable, Swedish points, and the dependent variable, mean number of subjects passed, is not significant at the 0.05 level of significance. The low r^2 and large S_e values indicate that data are widely dispersed. This can also be observed in Graph 2 which illustrates the dispersion of the Swedish points.

4.6.2 Student's T-tests

	No. of subjects passed after 1 year		No. of subjects passed after 2 years		No. of subjects passed after 3 years	
	<26 points	≥ 26 points	<26 points	≥ 26 points	<26 points	≥ 26 points
Mean	2.409	3.750	3.896	6.279	4.948	8.076
SD	1.730	1.467	2.866	2.729	3.839	4.122
N	77	86	77	86	77	86
p	0.000		0.000		0.000	

TABLE 8: Results of Student's T-tests for Swedish points

The results obtained from the Student's T-tests indicate that there is a significant difference between the mean number of subjects passed by students with less than 26 Swedish points compared to those students who have 26 Swedish points and above. This held for all three years of the study. The p values obtained in each of the three years were 0.000, thus Swedish points were correlated with the mean number of subjects passed in each year.

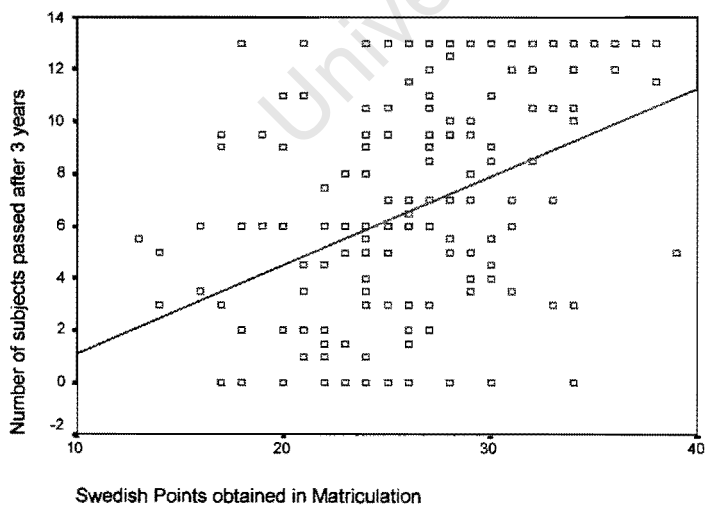
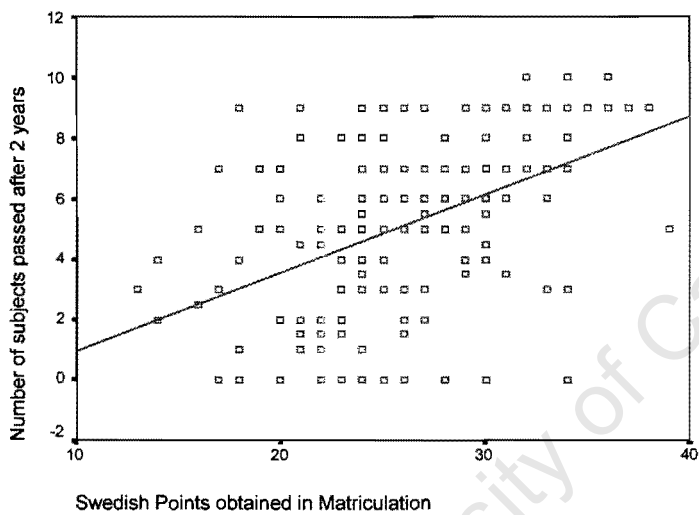
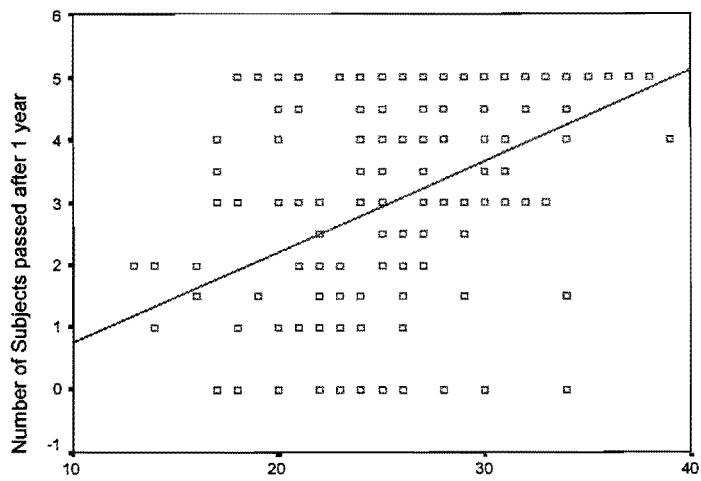
4.6.3 Classification of Students

Despite the weak correlations and high S_e values obtained, an analysis was conducted to predict student success in passing 13 subjects within 3 academic years based on the number of Swedish points achieved in matriculation. Students were categorized into two discreet groups: passing 13 subjects or passing fewer than 13 subjects. Students with less than 26 Swedish points were predicted to be unsuccessful and those with 26 Swedish points and above were predicted to be successful.

Actual Group	Number of Cases	Predicted Group			
		Unsuccessful < 26 points		Successful > 26 points	
		Number	%age	Number	%age
Unsuccessful < 13 subjects	141	73	51.77	68	48.23
Successful 13 subjects	22	4	18.18	18	81.82
	163	77	47.24	86	52.76

TABLE 9: Classification of students as successful/unsuccessful

From the above it was established that 91 students (55.83%) were correctly classified as successful or unsuccessful. 72 students (44.17%) were incorrectly classified. Slightly over half of the students in the study were correctly classified. A Chi-Squared Test was conducted to test for a significant association between obtaining 26 Swedish points and above and completing 13 subjects within three academic years. At the 0.05 level of significance, there is an association between Swedish points and the completion of 13 subjects (Chi-Squared = 8.609). The implications of this to the financial cost to the institution and the student, and the psychological cost to the student of being incorrectly classified, is very difficult to measure.



GRAPH 2: Swedish points and number of subjects passed each year

4.6.4 Conclusion

The aim of the hypothesis was to determine if students who have 26 Swedish points and above outperformed those students who had less than 26 Swedish points. This hypothesis was rejected, as in each of the three years of academic study there was a statistically significant difference between the mean number of subjects passed by students who had 26 Swedish points and above compared with those who had less than 26 Swedish points. A weak positive relationship was found between the mean number of subjects passed and Swedish points ($r = 0.45$). The percentage of explained variance in the final results by Swedish points varied between 0.202 and 0.173. These results were in agreement with the literature reviewed where Swedish points were correlated with success at tertiary institutions.

The large S_e values indicate that the data was scattered and thus less reliable. Swedish points were able to predict success reliably in only 55.83% of the cases studied. It follows from this finding that one should consider several other factors that may account for the academic success of students at tertiary institutions.

HYPOTHESIS TWO

4.7 MATHEMATICS

From the literature reviewed, the general finding was that there is a statistically low correlation between prior study of Mathematics and success in an Accounting programme. The objective of this hypothesis was to determine if this relationship holds true for students studying an Accounting programme at Technikon Natal.

Mathematics is a compulsory entrance requirement into the CMA programme, (refer to Table 3). Mathematics is not required for entry into the NDA programme, consequently there were 29 students (17,79%) without prior study of Mathematics. These students were excluded from hypothesis H_2 and the sample consisted only of students with a prior study of Mathematics.

H_2 : Students who have achieved a matriculation Mathematics mark of a HG-E or SG-D and above will not be more successful than those students who obtained marks below a HG-E or SG-D for Mathematics

Let D_1 = the mean number of subjects passed after one year by students with a HG-E or SG-D and above for matriculation Mathematics

D_2 = the mean number of subjects passed after one year by students with a matriculation Mathematics mark below a HG-E or SG-D

E_1 = the mean number of subjects passed after two years by students with a HG-E or SG-D and above for matriculation Mathematics

E_2 = the mean number of subjects passed after two years by students with a matriculation Mathematics mark below a HG-E or SG-D

F_1 = the mean number of subjects passed after three years by students with a HG-E or SG-D and above for matriculation Mathematics

F_2 = the mean number of subjects passed after three years by students with a matriculation Mathematics mark below a HG-E or SG-D

The hypothesis for year one:

$$H_0: D_1 = D_2$$

$$H_1: D_1 \neq D_2$$

The hypothesis for year two:

$$H_0: E_1 = E_2$$

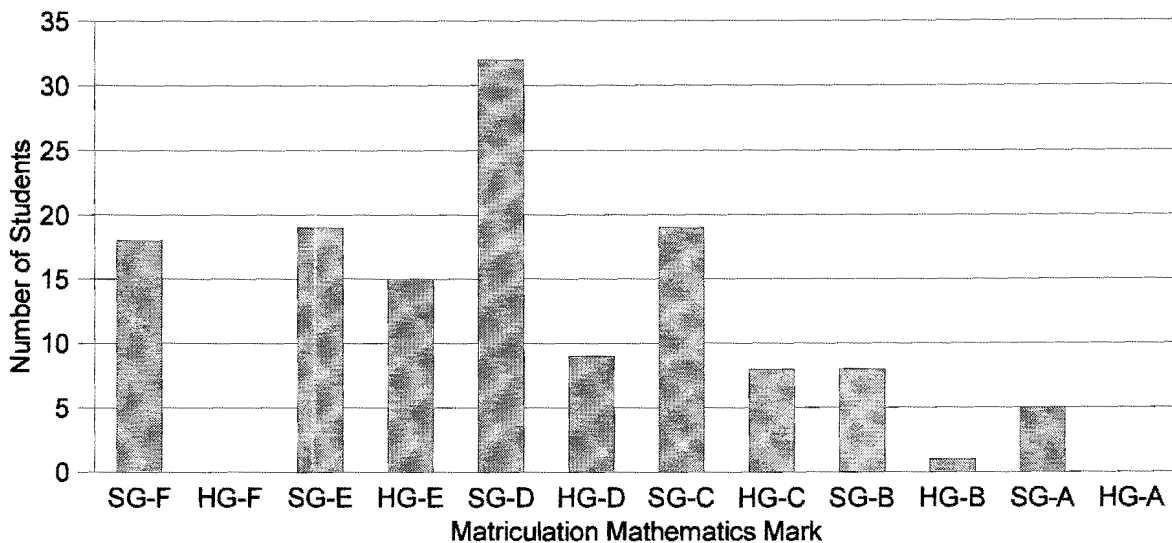
$$H_1: E_1 \neq E_2$$

The hypothesis for year three:

$$H_0: F_1 = F_2$$

$$H_1: F_1 \neq F_2$$

The distribution of the Mathematics marks is shown in Graph 3.



GRAPH 3: Distribution of students per matriculation Mathematics marks

4.7.1 Statistical Computations

Descriptive statistics are provided in Table 10. The mean Mathematics symbol is a SG-D. This equates to a mark of between 50% and 59%. Pearson's Coefficient of Skewness is 0.239. This indicates that the data was moderately positively skewed. The SD of +/- 2.554 shows that the data was fairly widely scattered about the mean.

Mean	Median	Mode	SD	Skewness
SG-D	SG-D	SG-D	2.554	0.239

TABLE 10: Descriptive statistics for Mathematics

The regression statistics are provided in Table 11. The results of the regression analysis reveal a negligible correlation between matriculation Mathematics and the mean number of subjects passed at Technikon Natal. The highest correlation was 0.124 after two years. These results are corroborated by the p values which are not significant. The S_e values also indicate that the data was widely dispersed and hence less reliable. This is illustrated in the Graph 4.

	Year 1	Year 2	Year 3
r	0.094	0.124	0.085
r ²	0.009	0.015	0.007
y	2.876	4.565	6.143
slope	0.064	0.147	0.145
p	0.282	0.155	0.327
S _e	1.741	3.029	4.334

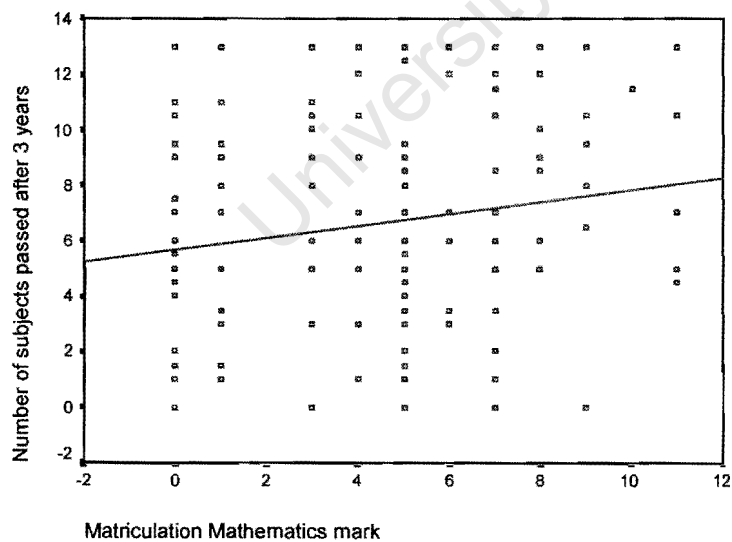
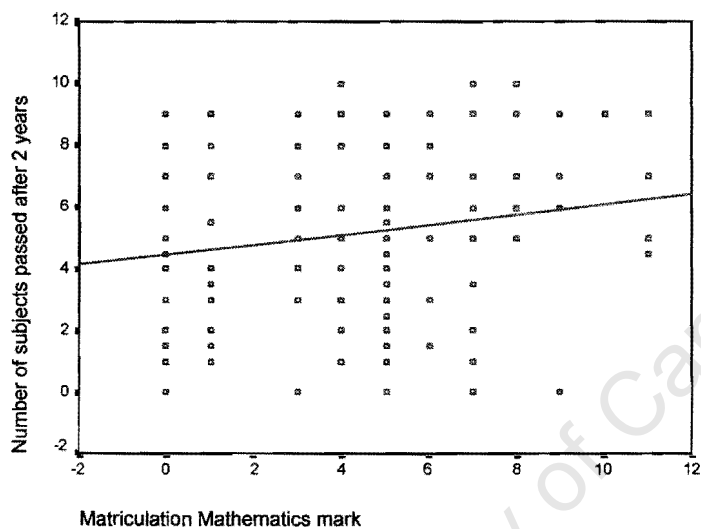
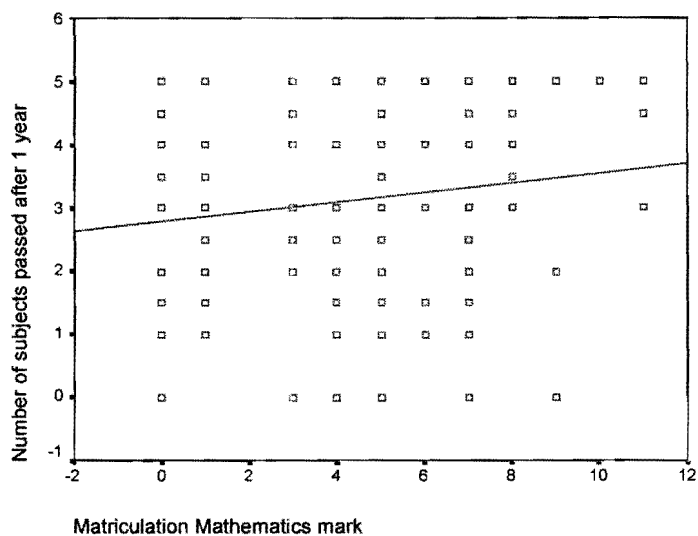
TABLE 11: Regression statistics for Mathematics

4.7.2 Student's T-tests

The results of the Student's T-tests are provided in Table 12. The '5' is from the weighting accorded to a mark of SG-D, the cut-off point for this hypothesis - refer to Table 5. At the end of the first year, the results of the Student's T-tests indicated that the mean number of subjects passed by each of the two groups of students, was almost the same. The high p value obtained shows that the Mathematics mark was not significant in accounting for the difference between students who had a mark above 5. This finding corroborates the very low r values obtained.

	No. of subjects passed after 1 year		No. of subjects passed after 2 years		No. of subjects passed after 3 years	
	≥5	<5	≥5	<5	≥5	<5
N	82	52	82	52	82	52
Mean	3.195	3.212	5.250	5.414	6.659	7.231
SD	1.781	1.696	3.088	2.977	4.356	4.315
p	0.958		0.763		0.458	

TABLE 12: Results of Student's T-tests for Mathematics



GRAPH 4: Matriculation Mathematics mark and number of subjects passed each year

After the second year of study, the students with a Mathematics mark of <5 , on average, passed marginally more subjects than those with a Mathematics mark of ≥ 5 - 5.414 subjects compared with 5.250 subjects. The p value obtained was high, indicating that after two years the correlation between matriculation Mathematics and the mean number of subjects passed was not statistically significant.

At the end of the third year the students with a Mathematics mark of <5 again did slightly better than the students with a Mathematics mark of ≥ 5 . The mean number of subjects passed by students with a Mathematics mark <5 was almost half a subject more than the students with a Mathematics mark ≥ 5 - 7.231 subjects compared with 6.659 subjects. The p values were also high at 0.458 again indicating that a Mathematics mark of ≥ 5 was not statistically significant.

4.7.3 Students without Prior Study of Mathematics

Due to the fact that there was not a significant difference in the number of subjects passed in each year of study between the students who had a matriculation Mathematics marks of ≥ 5 and those who had a mark of <5 , this was tested further to verify this relationship. The population was grouped into three distinct groups depending upon the student's Mathematics mark or lack thereof. Refer to Table 5. These groupings were used to differentiate between students who had no prior study of Mathematics, those with Mathematics marks below the minimum entrance requirement for Mathematics and those who met the entrance requirements:

	Comprising the following marks
Group 1 - 0	No maths
Group 2 - 1 to 4	HG-F, HG-E, SG-F, SG-E
Group 3 - 5 to 12	HG-A, HG-B, HG-C, HG-D, SG-A, SG-B, SG-C, SG-D

TABLE 13: Groups for Mathematics comparisons

An ANOVA was run to determine the mean number of subjects passed by each group in each year and the level of significance. The results are shown in Table 14.

	Group 1	Group 2	Group 3
N	29	52	82
Mean number of subjects passed after			
- one year	2.724	3.212	3.195
- two years	4.414	5.414	5.250
- three years	5.293	7.231	6.659
p	0.404	0.336	0.146

TABLE 14: Inter-group comparisons

The differences between the groups were not significant in any of the three years, with p values > 0.05. The mean number of subjects passed by students in Group 2 from year two onwards exceeded that of the other two groups. At the end of three years, the mean number of subjects passed by Group 2 was a half a subject more than Group 3 despite the fact that those students in Group 3 had higher Mathematics marks. This finding is consistent with the hypothesis.

The fact that the students with lower Mathematics marks on average did better than those students with higher Mathematics marks, is an area for future research.

4.7.4 NDA and CMA Comparison

As stated previously, the entrance requirements for the CMA programme have a Mathematics prerequisite. (Refer to Table 3.) In view of the above findings regarding Mathematics marks, a Student's T-test was conducted to compare the results of the CMA students with the NDA students. This was done to determine if the Mathematics entrance requirement improved students' chances of success in their studies.

The results are shown in Table 15. The results of this analysis revealed that there was no statistically significant difference between the mean number of subjects

	No. of subjects passed after 1 year		No. of subjects passed after 2 years		No. of subjects passed after 3 years	
	CMA	NDA	CMA	NDA	CMA	NDA
N	44	119	44	119	44	119
Mean	3.136	3.109	5.296	5.101	6.727	6.550
SD	1.768	1.719	2.995	3.054	4.099	4.355
p	0.930		0.715		0.811	

TABLE 15: Results of Student's T-tests comparing the differences between NDA and CMA students

passed by the two groups of students. The p values obtained were all high, $p > 0.715$. The results of this analysis were in agreement with the results reflected in the prior analysis regarding the study of Mathematics and its relation to passing an Accounting programme at Technikon Natal. Even though the CMA students had a compulsory Mathematics entrance requirement this did not enhance their prospects of success in their chosen course of study.

4.7.5 Conclusion

From the results obtained, there is no significant difference in the mean number of subjects passed by students who have a matriculation Mathematics symbol equal to or above a HG-E or a SG-D, and those who have a lower mark ($p's > 0.05$). This is corroborated by the fact that at best matriculation Mathematics explained only 1,5% of variance in the number of subjects passed each year. This was consistent with the literature reviewed in Chapter 2 where the correlation between Mathematics and performance in an Accounting programme was weak.

There was no significant difference between the NDA and CMA students in the mean

mean number of subjects passed each year. The Department of Accounting needs to take cognisance of this, coupled with the fact that Mathematics was found to have a very weak correlation with the mean number of subjects passed each year, with a view to addressing entrance requirements to the programmes. Due to the lack of significance of matriculation Mathematics as a predictor of success, matriculation Accounting marks were investigated to determine if a more significant relationship between matriculation subjects and the mean number of subjects passed each year could be established.

HYPOTHESIS THREE

4.8 ACCOUNTING

The results obtained from the previous hypothesis indicated that prior study of Mathematics had a negligible effect on student performance. The prior study of Accounting was investigated to determine if this subject served as a better predictor of success in Accounting studies. A linear regression was run to determine the correlation between Swedish points and Accounting marks. The r^2 was 18.5%, therefore the correlation between Swedish points and Accounting marks is low.

As only 5 students (3.1%) of the population had not studied Accounting at secondary level, this hypothesis investigated the differences between students who met the Accounting entrance requirement and those who did not. The minimum entrance requirement for Accounting is HG-D or SG-C. (Refer to Table 3 - Chapter 3 for entrance requirements.) The hypothesis is as follows:

H_3 : Students who have attained matriculation Accounting results above a HG-D or SG-C will not outperform those students who achieved lower results for Accounting

Let G_1 = the mean number of subjects passed after one year by students with a HG-D or SG-C and above for matriculation Accounting

G_2 = the mean number of subjects passed after one year by students with a

matriculation Accounting mark below a HG-D or SG-C

H_1 = the mean number of subjects passed after two years by students with a HG-D or SG-C and above for matriculation Accounting

H_2 = the mean number of subjects passed after two years by students with a matriculation Accounting mark below a HG-D or SG-C

I_1 = the mean number of subjects passed after three years by students with a HG-D or SG-C and above for matriculation Accounting

I_2 = the mean number of subjects passed after three years by students with a matriculation Accounting mark below a HG-D or SG-C

The hypothesis for year one:

$$H_0: G_1 = G_2$$

$$H_1: G_1 \neq G_2$$

The hypothesis for year two:

$$H_0: H_1 = H_2$$

$$H_1: H_1 \neq H_2$$

The hypothesis for year three:

$$H_0: I_1 = I_2$$

$$H_1: I_1 \neq I_2$$

4.8.1 Statistical Computations

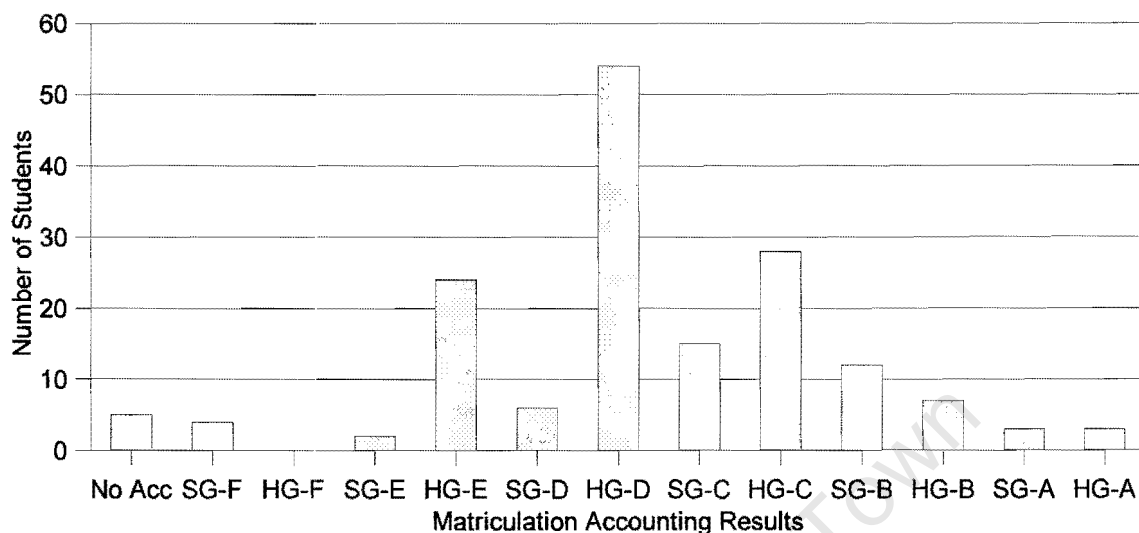
The descriptive statistics are as follows:

Mean	Median	Mode	SD	Skewness
HG-D	HG-D	HG-D	2.369	-0.365

TABLE 16: Descriptive statistics for Accounting

The mean, median and mode are all HG-D. This is the same as the minimum

entrance requirement to study for an Accounting diploma. The distribution, as measured by Pearson's Coefficient of Skewness, indicates that the data is only moderately negatively skewed. This is highlighted in Graph 5.



GRAPH 5: Distribution of students per matriculation Accounting results

Regression statistics for matriculation Accounting marks with the mean number of subjects passed in each year, are provided in Table 17.

	1 year	2 year	3 year
r	0.286	0.274	0.267
r ²	0.082	0.075	0.071
y	1.709	2.927	3.531
slope	0.209	0.350	0.483
p	0.000	0.000	0.001
S _e	1.660	2.924	4.133

TABLE 17: Regression statistics for Accounting

The r values obtained indicated that there was a low correlation between the mark achieved for Accounting in matriculation and the passing of an Accounting

programme at Technikon Natal. After one year, 28.6% of the variance between the mean number of subjects passed was explained by Accounting marks. This decreased by 2% over the three years. The p values show that there was a significant relationship between the mean number of subjects passed each year and the matriculation Accounting mark obtained by the student. The S_e values show that after one year, the Accounting mark is reliable as a predictor of success. However, as this value increases every year, after year three, the data is more scattered and hence less reliable. This fact is highlighted in Graph 6.

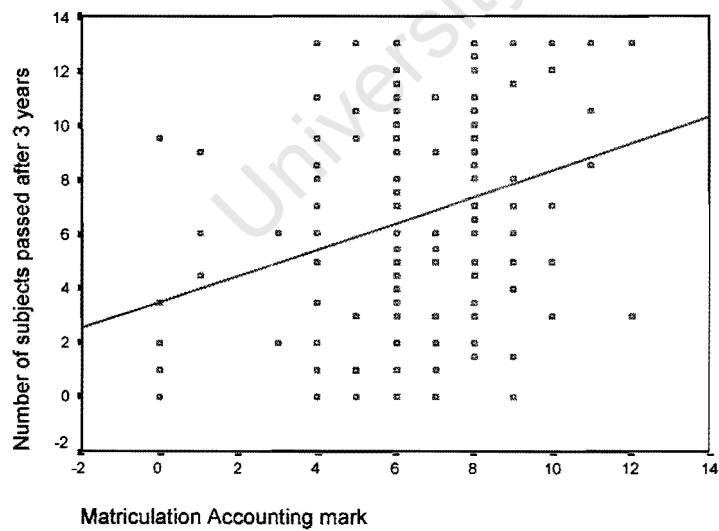
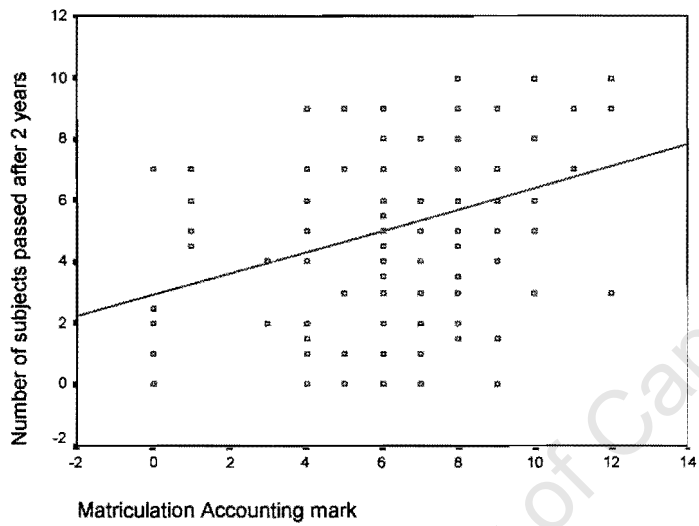
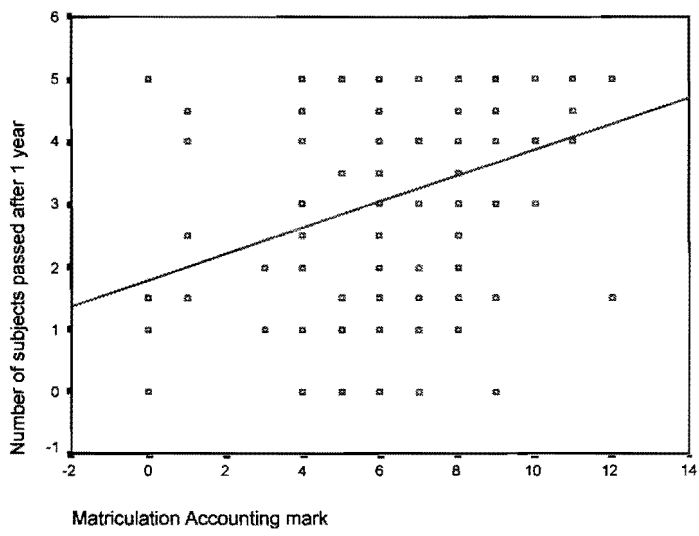
4.8.2 Student's T-tests

The results obtained from the Student's T-tests are provided in Table 18. Six is the rating applied to grades higher than HG-D, (refer to Table 5). The results of the Student's T-tests suggest that Accounting symbols above HG-D and SG-C are significantly correlated with the mean number of subjects passed each year. At the end of three years, the mean number of subjects passed by the students with higher Accounting marks, were 7 subjects compared with 5 subjects for students having a lower Accounting mark.

	No of subjects passed after 1 year		No of subjects passed after 2 years		No of subjects passed after 3 years	
	Acc < 6	Acc ≥ 6	Acc < 6	Acc ≥ 6	Acc < 6	Acc ≥ 6
N	41	122	41	122	41	122
Mean	2.256	3.406	3.842	5.594	4.915	7.164
SD	1.722	1.637	2.849	2.972	3.863	4.273
p	0.000		0.001		0.002	

TABLE 18: Results of Student's T-tests for Accounting

When considering the five students who had not studied Accounting at school, the mean number of subjects passed each year was: 1,7 subjects after one year, 2,5 subjects after two years and 3,2 subjects after three years. The mean number of



GRAPH 6: Matriculation Accounting mark and number of subjects passed each year

subjects passed is below those obtained by students who had a prior study of Accounting. None of these five students completed the programme within three years and only one of these students remained in the programme, having passed 9,5 subjects after three years.

4.8.3 Conclusion

The hypothesis tested was to determine if students who had attained matriculation Accounting results above a HG-D or SG-C would not outperform those students who achieved lower results for Accounting. This hypothesis was rejected as the students with Accounting marks of a HG-D or SG-C and above were more successful in every year of academic study than those with low Accounting marks. In every year of this study the difference in the mean number of subjects passed between the two groups of students was statistically significant.

HYPOTHESIS FOUR

4.9 ECONOMICS

From the literature reviewed in Chapter 2, one of the only subjects most often found to correspond with success in an Accounting programme, was Economics. This study investigated if a similar conclusion could be reached from the students registered in Accounting programmes at Technikon Natal. Of the population under investigation 104 students (63.8%) did not have a prior study of Economics. The hypothesis was formulated as follows:

H_4 : Students who have studied Economics as a matriculation subject will not outperform students who do not have a prior study of Economics

Let J_1 = the mean number of subjects passed after one year by students with matriculation Economics

J_2 = the mean number of subjects passed after one year by students without matriculation Economics

K_1 = the mean number of subjects passed after two years by students with matriculation Economics

K_2 = the mean number of subjects passed after two years by students without matriculation Economics

L_1 = the mean number of subjects passed after three years by students with matriculation Economics

L_2 = the mean number of subjects passed after three years by students without matriculation Economics

The hypothesis for year one:

$$H_0: J_1 = J_2$$

$$H_1: J_1 \neq J_2$$

The hypothesis for year two:

$$H_0: K_1 = K_2$$

$$H_1: K_1 \neq K_2$$

The hypothesis for year three:

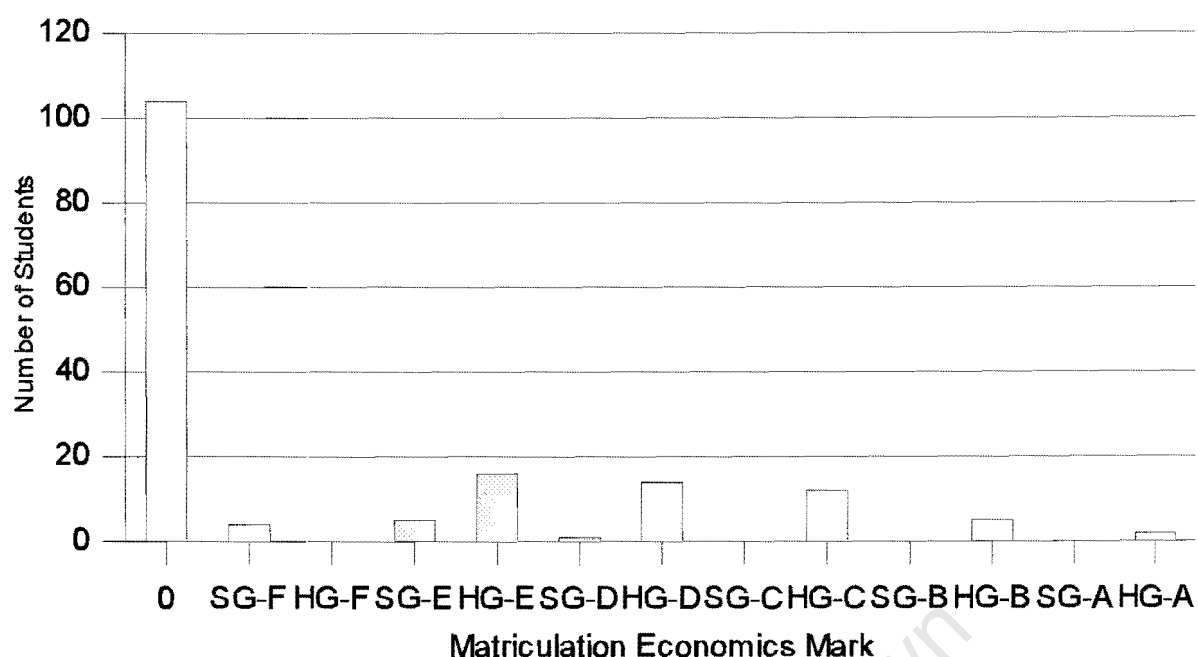
$$H_0: L_1 = L_2$$

$$H_1: L_1 \neq L_2$$

4.9.1 Statistical Computations

The descriptive statistics for Economics are provided in Table 19. The table provides the statistics for the students who have and those who have not studied Economics. This was done because, for the population as a whole the median and mode are no prior study of Economics. The mean matriculation Economics symbol for students who had studied the subject was a HG-D. The distribution of the data as measured by Pearson's Coefficient of Skewness was slightly positively skewed. Graph 8 shows the wide dispersion of the data and the line of best fit.

The distribution of students per symbol achieved is as follows:



GRAPH 7: Distribution of students per matriculation Economics mark

	Mean	Median	Mode	SD	Skewness
Population 163 students	HG-F	No prior study	No prior study	3.213	1.296
Economics 59 Students	HG-D	HG-D	HG-E	2.651	0.319

TABLE 19: Descriptive statistics for population and sample of Economics symbol

Regression statistics are provided in Table 20. The r and r^2 values obtained indicate that the relationship between Economics studied at high school and passing an Accounting programme is not highly correlated. The highest r^2 obtained after two years of study were only 0.070 of the variance in subjects passed and could be explained by the Economics symbol obtained at high school. The p values were all below the level of significance, therefore there was a correlation between matriculation Economics marks and the mean number of subjects passed in each

year of study.

	Year 1	Year 2	Year 3
r	0.222	0.264	0.231
r ²	0.049	0.070	0.054
y	2.866	4.631	5.952
slope	0.119	0.249	0.308
p	0.004	0.000	0.003
S _e	1.698	2.932	4.173

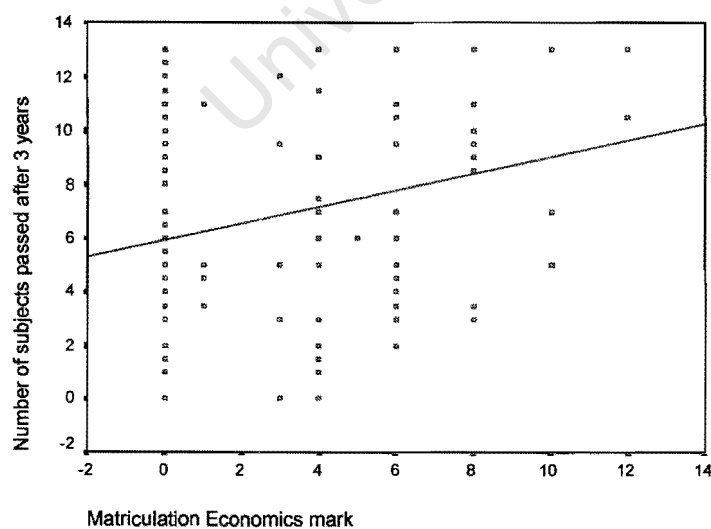
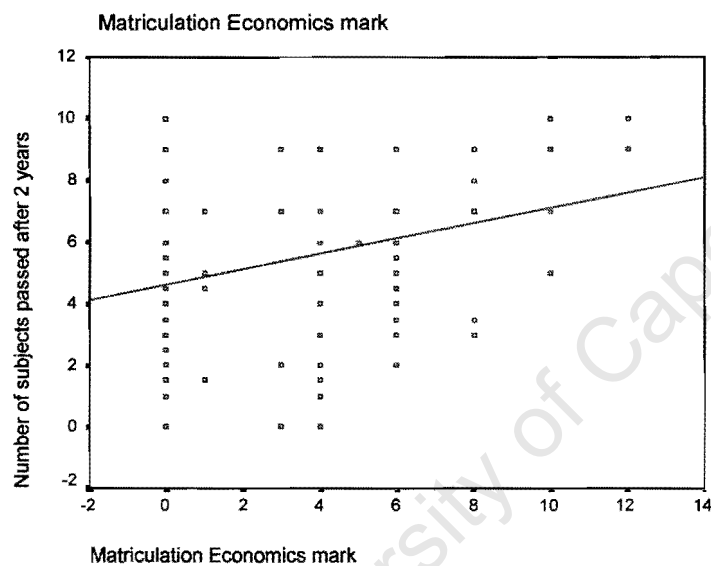
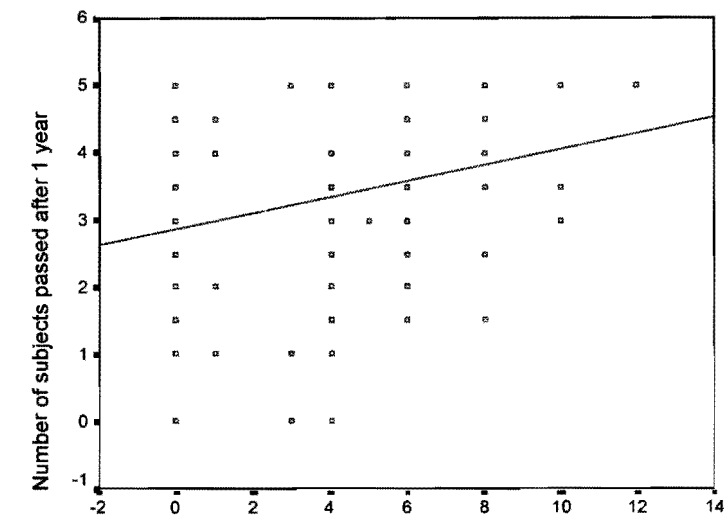
TABLE 20: Regression statistics for Economics

4.9.2 Mann-Whitney Tests

Due to the fact that the Economics data are non-parametric, Mann-Whitney tests were conducted. The results are provided in Table 21. The p values obtained indicate that there was not a statistically significant relationship between Economics results and the mean number of subjects passed. The mean number of subjects passed after three years of academic study differed by 1,2 subjects only. The hypothesis could not be rejected as there was no statistically significant difference in the mean number of subjects passed, p values < 0,05.

	No. of subjects passed after 1 year		No. of subjects passed after 2 years		No. of subjects passed after 3 years	
	No Econ	Econ	No Econ	Econ	No Econ	Econ
N	59	104	59	104	59	104
Mean	2.962	3.390	4.813	5.754	6.178	7.339
p	0.192		0.068		0.000	

TABLE 21: Mann-Whitney tests results for Economics



GRAPH 8: Matriculation Economics mark and number of subjects passed each year

4.9.3 Economics Student Results

For the students who have studied Economics, the distribution of Economics symbols are parametric. Therefore, the Student's T-tests were used to compare students who had over a SG-D for Economics with those who had SG-D and lower, a rating of 5 points (Table 5) and above. The results obtained are shown in Table 22.

The mean number of subjects passed by the students who had higher Economics marks was above those with lower Economics marks over all three years of the study. The difference between the mean number of subjects passed each year was statistically significant over all three years of the study ($p's < 0.05$). Therefore, the students who had obtained above SG-D for Economics outperformed those with a lower Economics mark.

	No. of subjects passed after 1 year		No. of subjects passed after 2 years		No. of subjects passed after 3 years	
	>5	<5	>5	5	≥5	5
N	34	25	34	25	34	25
Mean	3.941	2.640	6.706	4.460	8.471	5.800
SD	1.099	1.817	2.263	2.824	3.601	3.838
p	0.003		0.002		0.009	

TABLE 22: Results of Student's T-tests for Economics

4.9.4 Conclusion

This hypothesis stated that students who have studied Economics as a matriculation subject will not outperform those students who do not have a prior study of Economics. The hypothesis was rejected for all of the three years over which this study was undertaken. These findings were contrary to the reviewed literature where Economics was found to be positively correlated with success in Accounting programmes. Students with higher Economics marks did better than those with

lower Economics marks, however this may be as a result of their overall results being better than the overall results of students with a lower Economics symbol.

HYPOTHESIS FIVE

4.10 ACCOUNTING, MATHEMATICS AND ECONOMICS

For students intending to major in Accounting, it was assumed that prior study of Accounting, Mathematics and Economics would assist the student. This hypothesis investigated the contention that students with prior study of all three of these subjects exhibited a higher pass rate than those students who did not study these three subjects. The sample consisted of 41 (25.15%) students who had studied all three subjects. This group of students was compared to the 122 students who had not studied all three of these subjects.

H_5 : Students who studied Accounting, Mathematics, and Economics to matriculation will not be more successful than those students who had not studied all three of these subjects.

Let M_1 = the mean number of subjects passed after one year by students with matriculation Accounting, Mathematics and Economics
 M_2 = the mean number of subjects passed after one year by students without matriculation Accounting, Mathematics and Economics
 N_1 = the mean number of subjects passed after two years by students with matriculation Accounting, Mathematics and Economics
 N_2 = the mean number of subjects passed after two years by students without matriculation Accounting, Mathematics and Economics
 O_1 = the mean number of subjects passed after three years by students with matriculation Accounting, Mathematics and Economics
 O_2 = the mean number of subjects passed after three years by students without matriculation Accounting, Mathematics and Economics

The hypothesis for year one:

$$H_0: M_1 = M_2$$

$$H_1: M_1 \neq M_2$$

The hypothesis for year two:

$$H_0: N_1 = N_2$$

$$H_1: N_1 \neq N_2$$

The hypothesis for year three:

$$H_0: O_1 = O_2$$

$$H_1: O_1 \neq O_2$$

4.10.1 Statistical Computations

The relevant statistics are detailed in Table 23. For each of the three years, the explained variance was above 15% which was the best correlation obtained, with the exception of Swedish points. However, the correlations obtained are still low.

	Year 1	Year 2	Year 3
r	0.391	0.423	0.393
r ²	0.153	0.179	0.155
S _e	1.605	2.772	3.968
p	0.000	0.000	0.000

TABLE 23: Descriptive statistics for Accounting, Mathematics and Economics

The S_e and p values indicated that the study of Accounting, Mathematics and Economics was correlated with the mean number of subjects passed each year.

4.10.2 Mann-Whitney Tests

The results from the Mann-Whitney tests are in Table 24. The students were coded '1' if they had not studied Accounting, Economics and Mathematics and '2' if they had prior study of these three subjects. The mean number of subjects passed by

students with prior study of all three subjects was significant after two and three years of academic study. After one year of academic study the difference between the mean number of subjects passed by the two groups was not significant. At the end of the third year of academic study the students with prior study of these three subjects had passed almost two subjects more than those without prior study.

	No. of subjects passed after 1 year		No. of subjects passed after 2 years		No. of subjects passed after 3 years	
	1	2	1	2	1	2
N	122	41	122	41	122	41
Mean	2.992	3.488	4.844	6.073	6.119	8.024
p	0.112		0.021		0.012	

TABLE 24: Results of Mann-Whitney tests

4.10.3 Conclusion

This hypothesis stated that students who had studied Accounting, Mathematics and Economics to matriculation would not be more successful than those students who had not studied all three of these subjects. The hypothesis was accepted for the first year of academic study only. From the second year of academic study onwards, the students who had studied Accounting, Economics and Mathematics at matriculation level were more successful than those students who did not have a prior study of these three subjects. Therefore, the hypothesis was rejected for the second and third years of academic study.

HYPOTHESIS SIX

4.11 ENGLISH

The following hypothesis compared those students who had studied English as a first language to students who had studied English as a second language. It should be noted however that many of the students who studied English as a first language

are not English first language speakers.

H_6 : Students who have studied English as a first language will not have an advantage over those students who have studied English as a second language

Let P_1 = the mean number of subjects passed after one year by students who have studied English as a first language

P_2 = the mean number of subjects passed after one year by students who have studied English as a second language

Q_1 = the mean number of subjects passed after two years by students who have studied English as a first language

Q_2 = the mean number of subjects passed after two years by students who have studied English as a second language

R_1 = the mean number of subjects passed after three years by students who have studied English as a first language

R_2 = the mean number of subjects passed after three years by students who have studied English as a second language

The hypothesis for year one:

$$H_0: P_1 = P_2$$

$$H_1: P_1 \neq P_2$$

The hypothesis for year two:

$$H_0: Q_1 = Q_2$$

$$H_1: Q_1 \neq Q_2$$

The hypothesis for year three:

$$H_0: R_1 = R_2$$

$$H_1: R_1 \neq R_2$$

The population was approximately evenly split between students who had studied English as a first language, 87 students (53.4%), compared with students who had

studied English as a second language, 76 students (46.6%).

If the student did not meet the entrance requirement for English (refer to Table 3), the student was required to write an English Proficiency Test administered by the English Second Language Unit. The English Second Language Unit ran courses for students who were not proficient in English. Students were admitted onto programmes if they had obtained over a certain percentage in the test. Of the students registered only 3 (3.4%) of the English first language students and 34 (44.7%) of the English second language students did not meet the minimum entrance requirement and were only admitted after successfully completing the English Language Proficiency Test.

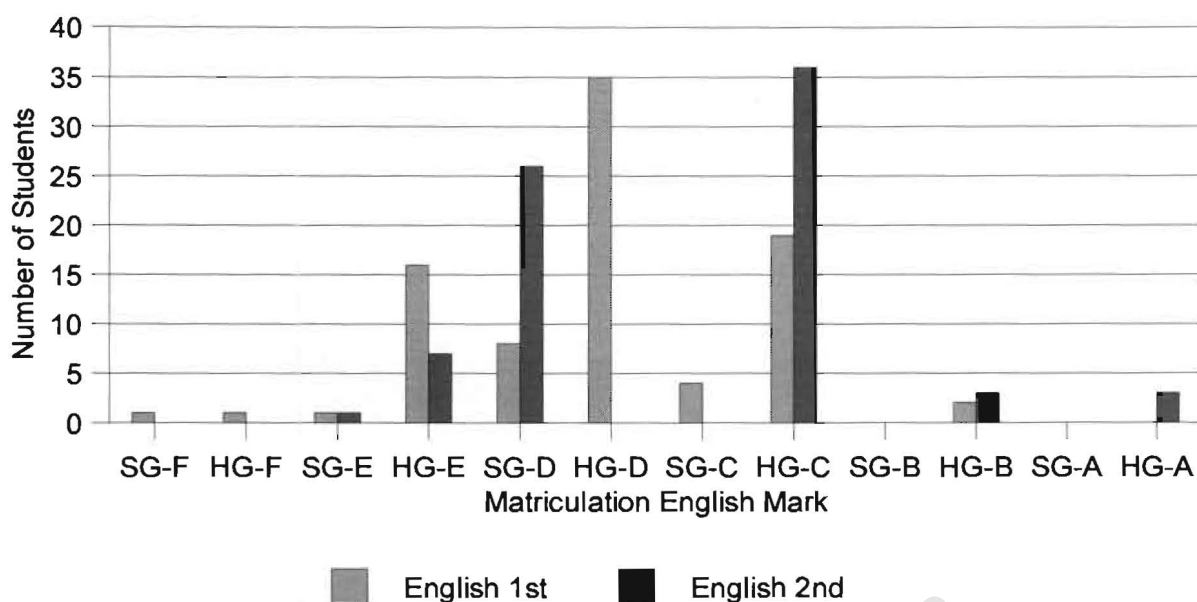
4.11.1 Statistical Computations

The descriptive statistics for English first and second language are provided in Table 25. The mean symbols obtained by both groups of students were the same as the entrance requirements for English. The data was normally distributed with the English 1st language being slightly negatively skewed and the English 2nd language being slightly positively skewed. This is illustrated in Graph 9.

	Mean	Median	Mode	SD	Distribution
English 1st	HG-D	HG-D	HG-D	1.649	-0.138
English 2nd	SG-C	HG-C	HG-C	1.796	0.300

TABLE 25: Descriptive statistics for English 1st and 2nd language

Regression statistics for English 1st and English 2nd language are shown in Table 26. From the results obtained, only a small percentage of the variance between the mean number of subjects passed could be explained by English results achieved in matriculation. The correlation was higher for students who studied English as a first language. The correlation was the strongest after the first year of study where 7.95% of the variance in the mean number of subjects passed was explained by



GRAPH 9: Distribution of students per English 1st and 2nd language marks

English 1st language. The p values, $p's < 0.05$, obtained suggested that there was a correlation between English first language and the mean number of subjects passed in each of the three years of academic study. The data is fairly reliable after the first year, $S_e = 1.738$, however, for years two and three the data is dispersed and not a good measure of reliability. This is illustrated in Graph 10.

	Year 1		Year 2		Year 3	
	English 1st	English 2nd	English 1st	English 2nd	English 1st	English 2nd
r	0.282	0.151	0.262	0.161	0.269	0.157
r ²	0.079	0.228	0.069	0.259	0.072	0.025
y	1.106	2.340	1.791	3.775	1.854	4.600
slope	0.307	0.137	0.494	0.260	0.708	0.363
p	0.010	0.192	0.014	0.164	0.012	0.174
S _e	1.738	1.623	3.014	2.873	4.124	4.119

TABLE 26: Regression statistics for English 1st language and 2nd language

For the students who studied English as a second language, the correlation was very low, $r^2 = 2.59\%$, between English results and the mean number of subjects passed each year. The p values were not significant for any of the three years studied, $p's < 0.05$.

4.11.2 Student’s T-tests

The results obtained by the students who had studied English as a first language were compared with those who had studied English as a second language, as shown in Table 27. The difference in the mean number of subjects passed by each of the two groups of students is not significant ($p's > 0.05$). The students who studied English as a first language did not outperform those who studied English as a second language in any of the three years of the study. However, after the second year of academic study, $p = 0.062$ was significant at the 10% level.

	No. of subjects passed after 1 year		No. of subjects passed after 2 years		No. of subjects passed after 3 years	
	English 1st	English 2nd	English 1st	English 2nd	English 1st	English 2nd
N	76	87	76	87	76	87
Mean	2.943	3.316	4.741	5.625	6.086	7.184
SD	1.800	1.629	3.105	2.892	4.348	4.143
p	0.167		0.062		0.101	

TABLE 27: Results of Student’s T-tests for English 1st and 2nd language

4.11.3 English Second Language Proficiency Test Comparison

As previously mentioned, 34 (44.7%) of the English second language students gained entrance to the programme by ‘passing’ the English Proficiency Test. The results of these students were compared with those of the English second language students who met the entrance requirements. The results are shown in Table 28.

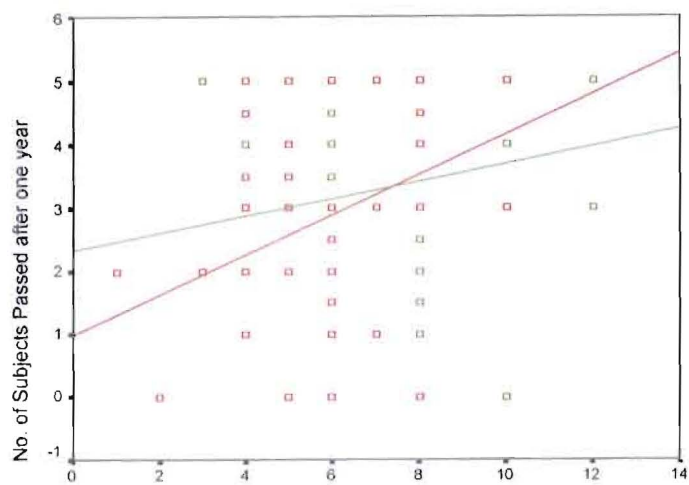
Only after the first year of academic study was there a difference between the two groups of students with regard to the mean number of subjects passed. The students who did not write the test, passed 3.6 subjects on average, compared with 2.9 subjects passed by the students who did write the test. In the second year of academic study there was no significant difference in the mean number of subjects passed between the students who wrote the English Proficiency Test and those who did not. However, the difference would have been significant at the 10% level of significance. After three years of academic study there was no significant difference between the two groups.

	No. of subjects passed after 1 year		No. of subjects passed after 2 years		No. of subjects passed after 3 years	
	No Test	Test	No Test	Test	No Test	Test
N	42	34	42	34	42	34
Mean	3.655	2.897	6.143	4.985	7.786	6.441
SD	1.504	1.700	2.737	2.989	4.034	4.215
p	0.046		0.086		0.163	

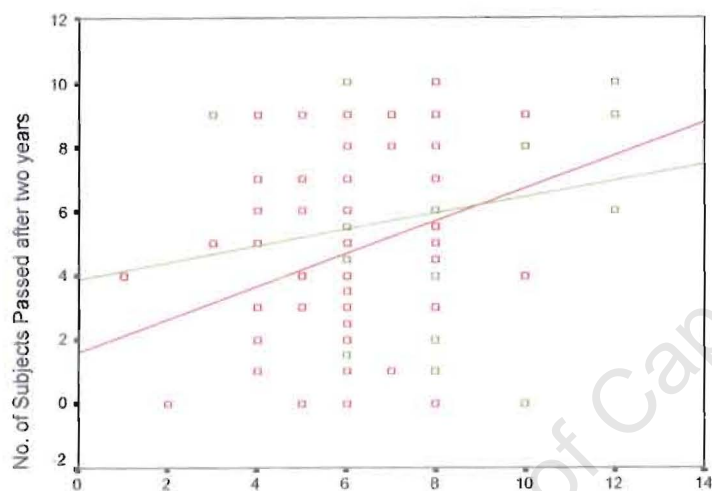
TABLE 28: Comparison between the results of English 2nd language students who wrote the proficiency test with those who did not write it

4.11.4 Conclusion

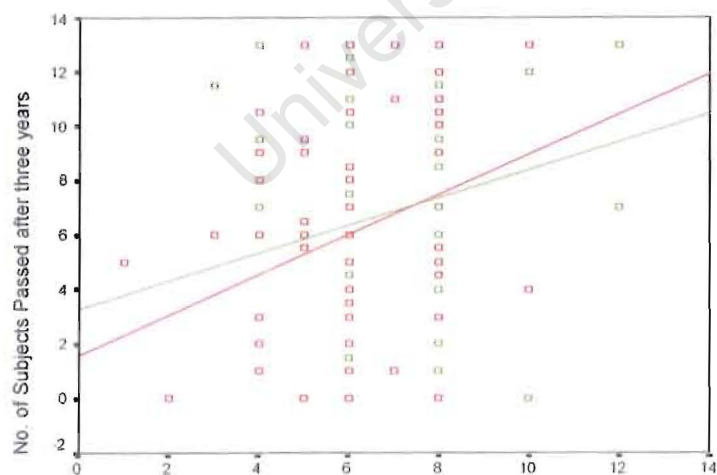
This hypothesis stated that students who had studied English as a first language will not have an advantage over those students who had studied English as a second language. The results obtained indicate that the hypothesis could not be rejected over any of the three years of the study. Whether the student had a prior study of English as a first or second language was not statistically significant and the correlation between matriculation English and the mean number of subjects passed at tertiary level was low. When considering the results of students who wrote the English Proficiency Test, the difference was statistically significant only in the first year of academic study. Therefore, it can be projected that, students gaining entrance to the Accounting programmes based on results obtained in the English



English 1st/2nd Language



English 1st/2nd Language



English 1st/2nd Language

English 1st Language
English 2nd Language

GRAPH 10: Matriculation English mark and number of subjects passed each year

Proficiency test will not do any better than those whose matriculation English marks met the entrance requirement.

University of Cape Town

CHAPTER 5

REVIEW

5.1 OBJECTIVE

The objective of this dissertation is to examine the current entrance requirements to Accounting programmes offered at Technikon Natal, and to ascertain the reliability of these requirements, namely matriculation results, as predictors of success in the programmes. The need for this study is highlighted by the fact that there is very little literature available on students studying Accounting programmes at tertiary institutions.

The high failure rates currently experienced at tertiary institutions, and the resulting reductions in government funding, have made it imperative that students who are selected for the course of study have a realistic chance of success. To improve pass rates, tertiary institutions are required to review current methods of student selection. Hence the importance of this study at Technikon Natal, where matriculation results are the sole criterion for admission into Accounting programmes.

5.2 LIMITATIONS

The study was subject to a number of limitations. Among these was that the results obtained from the research were specific to the group of students who studied the Accounting programmes offered at Technikon Natal in the years 1996 to 1998.

The effect of the lecturer within a subject and between subjects was not taken into consideration. Where more than one lecturer lectures on a subject, the student is free to move to the class of the lecturer with whom he/she feels most comfortable. All of the lecturers in the relevant subject follow a common study programme and all of the students do the same tutorial work, tests, assignments and examinations. However, the effect of the lecturer, may have influenced the study.

The education department under which the students wrote matriculation examinations was not considered for the following reasons. It was not possible to

differentiate between the education departments from the matriculation certificate. Each education department sets its own examinations, moderated by a national moderator to ensure a consistent standard and therefore differences in standards between examinations of the various education departments should be insignificant. When selecting students for Accounting programmes offered at Teknikon Natal, there is no differentiation between education departments. If the prospective student meets the entrance requirements, the student is accepted into the Accounting programme offered. Teknikon Natal, rightly or wrongly, deems that all matriculation results be treated equally for student selection purposes, so "theoretically" all matriculation results are equivalent for student selection purposes.

Success is defined as passing all 13 subjects within three academic years of first registration. A different definition of success would result in different results being obtained. For example, if all other programme elements were equal and success was considered to be completion of the programmes within four academic years of first registration, rather than three academic years. The mandatory length of Teknikon Accounting programmes is currently under review and is a fertile domain for further research.

CONCLUSIONS

5.3 HYPOTHESES TESTING RESULTS

A number of hypotheses were tested to determine if a correlation could be established between matriculation results and success in an Accounting programme in three academic years of study.

Hypothesis one tested whether there was a correlation between Swedish points obtained in the matriculation examinations and success in an Accounting programme at Teknikon Natal over three academic years. This hypothesis is rejected. Twenty-six Swedish points were chosen as the cut-off point. Twenty-six Swedish points were the mean number of points obtained by the students in the study. A mean of 26 Swedish points was chosen as there were no extreme values in the distribution of a typical student's matriculation results, reducing the likelihood of a skewed finding.

The conclusion reached from this hypothesis indicates that the difference in the mean number of subjects passed between students who had less than 26 Swedish points and those who had 26 Swedish points and above was statistically significant for student success in three academic years of the Accounting programme. A correlation coefficient of 20,25% after two years of study was the highest achieved from any of the hypotheses tested. This finding is in agreement with those obtained by Fresen and Fresen (1987), Behr (1985) and Jackson and Young (1987) who all found a strong correlation between Swedish points and passing in the areas investigated. However, the strength of the relationship of this study is not as high as those reviewed ($r = 0.45$).

Hypothesis two tested the relationship between matriculation Mathematics equal to and above HG-E and SG-D, and grades below this, as a predictor of success at Technikon Natal. This hypothesis was accepted. Results may differ for other institutions and other cut-off thresholds. The results indicate that there is a very low, almost negligible, correlation between matriculation Mathematics and success in an Accounting programme at Technikon Natal. These results concur with those obtained by Keef (1988) and Keef and Hooper (1991) where Mathematics provided a negligible advantage to Accounting students. This finding is reinforced by the fact that no difference was found between the performance of CMA and NDA students.

Hypothesis three tested the relationship between matriculation Accounting equal to and above HG-D or SG-C, and success in an Accounting programme. This hypothesis was rejected. The correlation was low, $r = 0.286$. However, the differences between the groups were significant for all three years of the study ($p's < 0.05$). Matriculation Accounting above HG-D and SG-C was statistically correlated to success in an Accounting programme. There have been no directly comparable studies regarding the prior study of Accounting at matriculation level and overall course success. The studies conducted by Keef (1998), Keef and Hooper (1991), Mitchell (1985 and 1988) and South African studies by Rowlands (1988) and van Rensburg et al (1998) considered prior study of Accounting and its effect on student achievement, limited to Financial Accounting only.

Hypothesis four tested whether students who have studied Economics as a matriculation subject will not outperform students who do not have prior study of Economics. This hypothesis was rejected. The reported research by Keef (1988), Ayaya (1996) and Bartlett et al (1993) found that school Economics was positively related to course performance. Results of the current study indicate that the mean number of subjects passed by students who have studied Economics at school perform better than those without prior study of Economics ($p's > 0.05$).

Hypothesis five tested whether the concurrent study of Accounting, Mathematics and Economics in matriculation would assist these students in being more successful in their studies. This hypothesis was accepted for the first year of academic study and was rejected for the second and third years of academic study. The correlation coefficient was the second highest obtained from the hypotheses tested ($r = 0.423$). This combination of subjects was also statistically significant for years two and three of the study. Thus students who have a prior study of these three subjects will perform better from the second year of study onwards.

Hypothesis six tested whether students who have studied English as a first language will not have an advantage over those students who have studied English as a second language. This hypothesis was accepted. The majority of students in the population are second language English speakers. Students who had studied English as a first language had higher correlation coefficients than those who had studied English as a second language, ($r < 0.282$ for English first language and $r < 0.161$ for English second language). These values indicate that a weak correlation exists. The difference between the two groups of students was not significant in any of the years of the study. Samkin (1996) in South Africa and Patkowski et al (1997) in the United States of America, obtained similar results with their studies of English Second Language students.

5.4 FUTURE RESEARCH

The research could be extended to include studies from other Technikons to determine if similar correlations exist between matriculation results and success in

an Accounting programme. The study could also be extended to students in other years of study at Technikon Natal to determine if similar results are obtained.

A further research area is that of student achievement in the Accounting programmes over four years, rather than three years. A more intensive analysis of student achievement over a longer time span needs to be carried out to determine if students benefit from a longer study period and show improved results as a consequence.

Further research could be done to determine whether students selected on the basis of a minimum requirement of 27 Swedish points produced better results than those in the current study. Preliminary research from this study has resulted in the Department of Accounting at Technikon Natal introducing a minimum prerequisite of 27 Swedish points as an additional entrance requirement for the Accounting programmes offered. In addition, the relevant weighting of Swedish points also needs to be investigated to determine if the weighting of certain subjects such as English, Accounting and Mathematics, result in more reliable predictors for successful study at Technikon Natal and other tertiary institutions.

The results of the Mathematics hypothesis show that the better the students do at Mathematics the worse their results in the Accounting programmes. This hypothesis needs further investigation to determine if this was isolated to this group of students. More research should be carried out into the entrance requirements of the CMA diploma to determine if prior study of Mathematics is a necessary prerequisite for success in this diploma.

Future research into whether students with low matriculation Accounting marks or no prior study of Accounting benefit from an intervention programme to improve their basic Accounting knowledge, needs to be done. This study found that students who obtained over a HG-D or SG-C for matriculation Accounting were more successful than those who obtained lower symbols or had not studied Accounting at school. This finding is contrary to Rowlands' (1988) conclusions. Rowlands claims that

students who studied Accounting at school enjoyed an initial advantage, in Financial Accounting I, over those who had not and by the end of first year the differences in success between the high school Accounting students and non-high school Accounting students had narrowed and closed. In the second and third years of Financial Accounting study there was no difference in achievement between the Accounting and non-Accounting students. Rowlands' study, conducted at a University, addresses only Financial Accounting I, II and III, while this study, conducted at a Technikon, addresses all subjects in the three year Accounting programme. These differences between the two studies could account for the discrepancies between this study's conclusions and Rowlands' conclusions. This study's results can be corroborated by a comparative study using students registered in subsequent years and applying the same research techniques. Thus the effect of whether remedial intervention does indeed enhance the student's potential to successfully complete an Accounting programme, needs to be determined.

Thought should be given to designing selection tests for entrance into Accounting programmes. The design of these tests and the evaluative criteria could provide scope for further research.

RECOMMENDATIONS

5.5 PREDICTORS OF SUCCESS

Although matriculation results were exhaustively analysed in this dissertation and some of the findings were inconclusive, overall the best predictor of success in an Accounting programme appears to be the Swedish points obtained by students in matriculation results. Even though total Swedish points were found to be the best indicator of the overall academic ability of the student, they have limited predictive value. Matriculation results are still the main entrance criteria used by tertiary institutions for accepting students onto academic programmes, in spite of the findings that matriculation results are not necessarily good predictors of success.

In view of the limited predictive value of matriculation results as predictors of success, and the fact that matriculation results are extensively used by tertiary

institutions, alternative methods of using these results need to be explored. Methods such as weighting subjects or applying different values to matriculation symbols, may result in more successful students being selected onto Accounting programmes and this in turn could increase lecturer and student motivation.

5.6 CAVEAT EMPTOR

Until a more reliable predictor of performance in Accounting programmes is found, matriculation results will continue to be used for acceptance into these programmes. This is because matriculation results are the most readily available standard measure of academic achievement, even though they have proved, in this study, to have limited predictive ability and should be used with caution. Caveat emptor.

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